LAKE RIVER CONSTRUCTION COMPLETION REPORT

LAKE RIVER REMEDIAL ACTION

FORMER PACIFIC WOOD TREATING CO. SITE
111 W. DIVISION STREET
RIDGEFIELD, WASHINGTON

Prepared for
PORT OF RIDGEFIELD
RIDGEFIELD, WASHINGTON
October 1, 2018
Project No. 9003.01.40

Prepared by
Maul Foster & Alongi, Inc.
400 E Mill Plain Blvd., Suite 400, Vancouver, WA 98660

MAUL
FOSTER
ALONGI

LAKE RIVER CONSTRUCTION COMPLETION REPORT

LAKE RIVER REMEDIAL ACTION

The material and data in this report were prepared under the supervision and direction of the undersigned.

MAUL FOSTER & ALONGI, INC.

This digital seal certifies the signatory and document content.

10.01.2018

Joshua Elliott, PE
Senior Engineer

Phil Wiescher, PhD
Senior Environmental Scientist

CONTENTS

CONTENTS (CONTINUED)

TABLES AND ILLUSTRATIONS

FOLLOWING THE REPORT:

TABLES

FIGURES

ACRONYMS AND ABBREVIATIONS

AU	approval unit
CAP	cleanup action plan
the City	City of Ridgefield
COE	Corps of Engineers, U.S. Army
CQA	construction quality assurance
DAHP	Washington State Department of Archaeology and Historic Preservation
DAR	daily activity report
DMS	Dixon Marine Services, Inc.
DNR	Department of Natural Resources (Washington)
Ecology	Department of Ecology (Washington)
ENR	enhanced natural recovery
ESA	Endangered Species Act
eTrac	eTrac, Inc.
FD	field directive
FS	feasibility study
GPS	global positioning system
HASP	health and safety plan
H:V	horizontal to vertical
JARPA	joint aquatic resources permit application
LRIS	Lake River Industrial Site
MFA	Maul Foster & Alongi, Inc.
MHA	materials handling area
MTCA	Model Toxics Control Act
ng/kg	nanograms per kilogram
NGVD	National Geodetic Vertical Datum of 1929/1947
NOAA-Fisheries	National Oceanic and Atmospheric Administration Fisheries Service
NPDES	National Pollutant Discharge Elimination System
OHW	ordinary high water
PBI	Paul Brothers, Inc.
the Port	Port of Ridgefield
PWT	Pacific Wood Treating Co.
RA	remedial action
RFI	Request for Information
RI	remedial investigation
RNWR	Ridgefield National Wildlife Refuge
RTK-GPS	real-time kinematic global positioning system
Storedahl	J.L. Storedahl & Sons
Strider	Strider Construction Company, Inc.
TRM	turf reinforcement mat
USFWS	U.S. Fish and Wildlife Service

ACRONYMS AND ABBREVIATIONS (CONTINUED)

WDFW	Department of Fish and Wildlife (Washington)

1 INTRODUCTION

On behalf of the Port of Ridgefield (the Port), Maul Foster & Alongi, Inc. (MFA) has prepared this report describing the completion of remedial actions at Lake River, which is adjacent to the former Pacific Wood Treating Co. (PWT) site in Ridgefield, Washington (see Figure 1-1). The remedial action was completed under the authority of Consent Decree No. 13-2-03830-1 (Washington State Department of Ecology [Ecology], 2013b) between the Port and Ecology to satisfy the requirements of the Model Toxics Control Act (MTCA) and state sediment management standards.

This report fulfills Ecology's requirement for a cleanup action report detailing cleanup activities and documenting adherence to—or variance from—goals set out in the cleanup action plan (CAP) (Ecology, 2013a). The requirement for a cleanup action report is specified in the CAP, and additional details regarding completion reporting are included in the Ecology-approved remedial design report for Lake River (MFA, 2014a).

The goals set out in the CAP for the remedial action included the excavation and disposal of contaminated sediments from Lake River; placement of a clean layer of sand; and bank stabilization elements. The project included planting vegetation to restore areas disturbed by construction and installing three planting groves to enhance the riverbank. The remedial action is complete and was performed fully consistent with the requirements of the CAP (Ecology, 2013a), and was generally consistent with the remedial design report (MFA, 2014a).

1.1 Site Location and Setting

Lake River is a tidally influenced, 11-mile-long side channel of the Columbia River west of Ridgefield, Washington, near the confluence of the Columbia River and the Lewis River (see Figure 1-2). The approximately 40-acre Lake River Industrial Site (LRIS), now known as Millers' Landing, and a portion of the Port Marina border the project area to the east. The Ridgefield National Wildlife Refuge (RNWR) forms the west bank of Lake River. The RNWR also borders the east bank of Lake River, just north of the project area. To the south, there is a public boat launch ramp and McCuddy's Marina, which offers moorage and spaces for houseboats (see Figure 1-3). Additional information regarding the hydraulic, hydrologic, and ecological settings of Lake River is included in the remedial design report (MFA, 2014a).

Based on available information, maintenance dredging of Lake River by the U.S. Army Corps of Engineers (COE) was last conducted in 1970. The COE is authorized to dredge a channel to a width of approximately 100 feet and a depth of six feet, and typically dredges two additional feet as an over-dredge allowance and to account for refill. There are no plans for COE dredge activities in Lake River in the near future; however, future dredging, if proposed by the COE, would need to take into account the remedial action completed in Lake River.

Lake River is a tidally influenced, 11-mile-long channel. The channel is hydraulically connected at its mouth to the Columbia River, through Bachelor Island Slough (approximately one mile upstream of the mouth), and through a tide gate/flushing structure along the western shoreline of Vancouver Lake. It originates at Vancouver Lake in Vancouver, Washington, to the south; runs parallel to the Columbia River; and merges with the Columbia at the northern tip of Bachelor Island. The National Wetlands Inventory has classified Lake River as a riverine, tidal, unconsolidated bottom, permanent tidal habitat. Lake River is slow moving because there are no significant inputs to Vancouver Lake; primary flow is associated with tidal fluctuation and with surges caused by cargo ship traffic on the Columbia. Its width varies from approximately 100 feet to over 300 feet, and its depth typically averages no more than 10 feet along the entire length.

In the remedial action area, Lake River is approximately 300 feet wide. Depth varies with slopes from the riverbank to the channel. During the fall/winter work window (i.e., during typical high-water events), depths range from less than 10 feet near shore to more than 25 feet deep at the extent of the work area in the channel. Generally, steep banks occur on both sides of Lake River, and there is no emergent vegetation. Armoring and vegetation dominate Lake River's western shoreline.

Currently, Lake River is frequented by recreationists and is habitat to aquatic animals, including water birds such as the great blue heron, and aquatic mammals such as the river otter. Because Lake River is a tributary of the lower Columbia River, special-status anadromous fish (such as salmonids and eulachon) may be present at certain times of year; however, migration of listed species (i.e., listed as threatened or endangered) is generally expected to occur in the mainstem Columbia River.

1.2 Site History

PWT operated a wood-treating facility from 1964 to 1993 at the Port's LRIS. PWT filed for bankruptcy in 1993 and abandoned the LRIS. PWT's operations involved pressure-treating wood products with oil-based treatment solutions containing creosote, pentachlorophenol, and water-based mixtures of copper, chromium, arsenic, and/or zinc. A remedial action has been completed on the uplands portion of the property, consistent with the remedy selected in the CAP (Ecology, 2013a). Pathways and sources of contamination to Lake River have been removed and an upland cap has been installed.

1.3 Project Purpose and Need

On September 24, 2001, the Port entered into an agreement with Ecology to conduct a remedial investigation (RI) and feasibility study (FS) at the site. The RI/FS was finalized in July 2013 (MFA, 2013b). The remedial action was selected by Ecology (Ecology, 2013a; Ecology, 2013b) consistent with MTCA, Washington Administrative Code 173-340-380. The remedy selected by Ecology, and documented in the CAP (Ecology, 2013a), is based on the final RI/FS report.

The purpose of this RA is to address the presence of dioxins and other collocated chemicals in sediment found in Lake River. As described in the CAP (Ecology, 2013a), the indicator hazardous substances in sediment at the site are dioxins. Dioxins are carcinogenic and are hydrophobic compounds that bioaccumulate in food chains; thus, these chemicals can cause adverse effects at low

concentrations. The dioxin CUL established in the CAP is 5 ng/kg TEQ and the dioxin remediation level (REL) is 30 ng/kg TEQ. The dioxins are collocated with other contaminants in the sediment (i.e., pentachlorophenol, m&p cresol, and polycyclic aromatic hydrocarbons).

As set forth in the CAP, the remedial action is intended to stabilize the bank and, to the extent feasible, remove contaminated sediment. The in-water portion of the remedy entails removal of sediment above the REL using precision mechanical dredging followed by placement of clean sand to control residuals and enhance the natural recovery of remaining low-level concentrations in the river. In addition, the CAP calls for an approximately one-foot-thick sand layer placed over all areas outside of the dredge prism that exceed the CUL of 5 ng/kg, to immediately reduce surface concentrations below the CUL and enhance natural recovery of sediment. The depositional nature of the Lake River environment will also contribute to natural recovery. These primary in-water cleanup components are shown in Figure 1-4. Additional identified in-water cleanup components include the following:

- Existing in-water structures identified in the plans will be demolished prior to dredging.
- Best management practices (BMPs) for water quality will be implemented during work; these will include operational controls; dredge methods; and turbidity monitoring before, during, and after construction. Decanted water from the dredged sediment will be treated for turbidity before it is discharged back to Lake River. Additional BMPs will be considered and implemented if required during the work.
- Dredged material will be disposed of as nonhazardous material waste at a Subtitle D landfill facility.
- Natural recovery will be monitored; monitoring will quantify the reduction and/or stabilization of concentrations relative to the CUL.

The bank portion of the remedy will stabilize the bank. The bank will be covered with a geotextile filter fabric and a rock stabilization layer, the latter of which will consist of rounded gravels and cobbles resistant to erosion (i.e., "fish mix"). Stabilization of the bank will reinforce the existing slopes; the fabric and fish mix will act as a physical barrier to movement of underlying soil and sediment. To protect against erosion during high-water events, turf reinforcement mat (TRM) will be placed on the existing upland clean soil cap, above the fish mix layer, and will extend down into the fish mix layer for additional anchoring.

Long-term institutional controls will not be required; however, an updated characterization of sediment conditions may be needed before any future activities that may result in significant sediment disturbance, such as in-water construction or dredging, are initiated.

1.4 Permits, Review, and Substantive Requirements for Sediment Remedial Action

All necessary documents were obtained for the project and are described in the remedial design report (MFA, 2014a). The following permits, certifications, approvals, and notifications were required before the start of construction and are included in Appendix A:

- Clean Water Act Section 404 permit and Section 10 Rivers and Harbors Act authorization—U.S. Army Corps of Engineers (COE). The COE issued Nationwide Permit 38 (NWS-2013-875) to the Port on September 25, 2014. The in-water work window assigned to the project was October 1, 2014 through January 15, 2015. An extension of this in-water work window until February 7, 2015 was granted by COE on January 7, 2015. The permit requirements also included archeological monitoring to ensure protection of cultural resources and implementation of the Lake River riparian enhancement plan (also see Section 4.8) to improve the physical characteristics of the riverbank and establish a native plant community. The certificate of compliance for this permit is included in Appendix A.

- Demonstration of substantive compliance with the Clean Water Act Section 401 Water Quality Certification—Ecology Shoreland and Environmental Assistance Program. The proposed work was found to comply with Ecology's Water Quality Certification requirements as documented in the Nationwide Permit 38 (NWS-2013-875). Water quality (turbidity) was monitored for the duration of in-water construction, consistent with an approved Water Quality Plan (MFA, 2014b). Return-water from the dredged material was tested and shown to meet the water-quality standards. In addition, access improvements and sediment-handling operations water was directed through erosion- and sediment-control features to meet water-quality standards.

- National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit—Ecology Water Quality Division. Ecology issued Administrative Order #10830 on August 5, 2014; coverage under the construction stormwater general permit was granted on August 11, 2014.

- Endangered Species Act (ESA) and Magnuson-Stevens Fishery Conservation and Management Act consultation—National Oceanic and Atmospheric Administration Fisheries Service (NOAA-Fisheries). On April 10, 2014, NOAA-Fisheries determined the proposed project is "not likely to adversely affect" ESA-listed species and concluded the action would not adversely affect essential fish habitat; thus, consultation under the Magnuson-Stevens Fishery Conservation Act was not required for this action. Construction activities were implemented consistent with the Biological Evaluation prepared for the informal ESA Consultation.

- Demonstration of compliance with the National Historic Preservation Act (NHPA) and Washington State Executive Order 05-05—COE and Washington State Department of Archaeology and Historic Preservation (DAHP). On April 28, 2014, COE determined that there would be no adverse effect to historic properties due to the proposed project. As part of the Nationwide Permit 38 (NWS-2013-875) requirements, archeological monitoring was conducted to ensure protection of cultural resources.

- Demonstration of substantive compliance with the requirements of the Hydraulic Project Approval process—Washington State Department of Fish and Wildlife (WDFW). WDFW provided a letter outlining the substantive requirements of the Hydraulic Project approval process on June 4, 2014. All requirements provided by WDFW were met.

- Right of Entry—Washington State Department of Natural Resources (DNR). On September 29, 2014, DNR granted an Aquatic Lands Sediment Remediation Easement (No. 51-091559). The permitted use of the easement property is for implementation of the remedial action, as described in the CAP.
- Demonstration of substantive compliance with applicable City of Ridgefield (City) code. On May 21, 2014, the City provided a letter to Ecology stating that the cleanup actions will meet the substantive requirements of the City's development regulations and shoreline master program. Construction activities were conducted consistent with the substantive requirements.
- State Environmental Policy Act—Ecology. Ecology issued a Determination of Non-significance for public comment on April 10, 2014. No comments were received.

1.5 Completion Report Objectives

This report is being submitted to provide a description of the units of work associated with the project; summarize the Construction Quality Assurance (CQA) program, implemented to ensure that the project was constructed in compliance with the approved design; and describe any issues incurred and subsequent resolutions and changes to the design.

2 PROJECT TEAM AND SCHEDULE

2.1 Project Team

The construction project team consisted of the following members:

- Owner—Port of Ridgefield. Ms. Laurie Olin served as the Port's project manager.
- Engineer, Construction Management and Construction Oversight—Maul Foster & Alongi, Inc. (MFA). Responsible for project design; overall project conformance to the approved design; CQA of soil removal and management; quantity tracking; unit of work approvals during construction; and on-call engineering services during construction.
- Contractor—Remediation Project General Contractor—Dixon Marine Services, Inc. (DMS). Responsible for remediation project construction.
- Subcontractor—Remediation Project Subcontractors—WaterTectonics (water treatment); HydroChem LLC (water treatment); Diversified Marine, Inc. (marine equipment); eTrac, Inc. (eTrac) (land-based and bathymetric surveying).
- Landscaper—Landscaping Project General Contractor—Paul Brothers, Inc (PBI). Responsible for supply and installation of landscaping components.

- Regulatory Compliance Monitoring—MFA (turbidity monitoring).

2.2 Project Schedules

A general project schedule is shown in Figure 2-1. As the remediation and landscaping portions of the work were bid separately, further schedule details are described separately below.

2.2.1 Remediation Project Schedule

The project went out for bid on April 8, 2014 with the final award notification going to DMS on June 18, 2014. DMS mobilized land-based construction equipment to the site beginning in September 2014 and immediately started work on the upland portion of the project (above ordinary high water [OHW] elevation). In-water construction (below OHW elevation) began on October 1, 2014, consistent with the COE-prescribed in-water work window of October 1, 2014 to January 15, 2015. An extension of the in-water work window until February 7, 2015 was granted on January 7, 2015. In-water construction concluded on February 2, 2015 with final upland site stabilization (erosion control) completed in mid-March 2015.

2.2.2 Landscaping Project Schedule

The landscaping portion of the project went out for bid on July 30, 2014, with the final award notification going to PBI on August 29, 2014. In late 2014, PBI began mobilizing its materials and equipment to the site to complete the site restoration and all associated plantings. Plantings were completed in May 2015, consistent with the Lake River Riparian Enhancement Plan (LRRE) (see Appendix G), per the Nationwide Permit 38 (NWS-2013-875) requirements. PBI maintained the planted areas during the summer months, including installing an irrigation system (and making adjustments and repairs to the system as needed); removing invasive plants; and removing plant collars as the plants grew beyond the confines of these protective barriers. MFA gave verbal notice of substantial completion to PBI at a site inspection in fall 2015. In October 2015, PBI removed the irrigation system.

3 CONSTRUCTION QUALITY ASSURANCE

The construction quality assurance effort encompassed several components including management, monitoring, and coordination among all members of the multidisciplinary construction team. Each of the primary components is described in this section.

3.1 Construction Submittals

The contractor and landscaper provided technical submittals before and during construction, consistent with the requirements and schedule provided in the project specifications. Submittals were received by the engineer and reviewed or distributed to the applicable parties for review.

Upon review, the Engineer provided the submitter a status determination for each submittal. An approval-for-use determination was returned to the contractor for submittals not requiring corrective action. Submittals that were not in compliance with the specifications were notated with deficiencies and returned for revision and resubmittal by the contractor. Actions regarding the submittals were recorded in the submittal control log. Submittal documents are kept on file by the owner and the engineer.

3.2 Construction Meetings

Construction coordination meetings were held on site and included the appropriate contractor, engineer, and the Port. The meetings were held to discuss schedule, outstanding issues, and other topics as designated by the engineer. Meetings were typically held on Wednesday afternoons from September 2014 through February 2015.

3.3 Construction Daily Reports and CQA Forms

During sediment remedy construction, reports of construction activities and CQA forms for individual work components were completed daily by members of the construction oversight team. Reports were made to record observations regarding site conditions, contractor activities, construction issues, and construction progress. The CQA forms were completed daily in conjunction with CQA tasks for distinct components of the work (e.g., sediment dredging, enhanced natural recovery [ENR] sand placement) to verify that the work was performed consistent with the plans and specifications. Daily reports typically included photos of the day's construction activities.

The construction daily reports and CQA forms are kept on file by the engineer. A sample daily report and CQA forms are provided in Appendix B. Descriptions of CQA tasks for components of the work are provided in the remedial design report (MFA, 2014a).

3.3.1 Photographic Log

Photographs were taken daily by the construction oversight team to record units of work and site conditions, and to supplement the construction daily reports and CQA forms. Photographs were logged and stored by the engineer. A photographic log summary can be found in Appendix C. A full inventory of digital construction photographs is maintained by the Port and the engineer.

3.4 Construction Oversight

Construction oversight was performed by MFA. All members of the oversight team reported observations, issues, and recommendations to the project engineers for communication to the contractor when required. The construction oversight program consisted of civil, environmental, and landscaping oversight as described in this section.

3.4.1 Civil Oversight

Civil construction oversight consisted of observing and reporting excavation and material placement to design grades and methods on the bank and in water. Civil oversight was conducted by MFA. Two to three engineers and CQA officers from MFA were on site for the duration of the project to observe all units of work.

CQA officers were assigned to observe in-water activities on the crane derrick and dredge barge to assist in coordination of daily activity; material placement areas; and placement methods, as well as to provide quality control. Typically, one crane derrick and one dredge barge operated concurrently and required oversight on a six- to seven-day schedule for the in-water work period of October 1, 2014 to the conclusion of in-water work on February 2, 2015. Two engineers were also on site as the on-call engineer to provide input to the contractor as requested; process incoming reports; analyze daily bathymetric surveys; provide material placement approvals for ENR sand and fish-mix rock; and complete daily project and routine regulatory reporting.

Civil oversight also included quantity tracking for contract administration purposes. Quantity tracking utilized daily surveys, observations, submittals, and contractor daily reports to generate and verify pay estimates each month.

3.4.2 Environmental Oversight

Environmental oversight consisted of collecting on-site water treatment samples, observing on-site sediment treatment, and monitoring water quality within Lake River. Environmental oversight was conducted by MFA.

3.4.3 Landscaping Oversight

Periodic oversight was conducted by MFA during landscaping construction. Oversight included verification of installation methods and compliance with project plans and specifications. Plant quantities and varieties; seed mixes; and Flexterra® flexible-growth, medium application rates were verified and approved prior to construction. Installation of the Enkamat® turf reinforcement mat (TRM), hydroseed, and plant material was observed to confirm that appropriate construction practices were utilized. Landscape oversight also included quantity tracking, observations, and submittals to generate and verify pay estimates each month.

3.5 Water Quality Monitoring

Water quality (turbidity) was monitored for the duration of in-water construction, consistent with the approved Water Quality Plan (MFA, 2014b). Continuous turbidity measurements were taken at the early warning monitoring locations to inform construction operations. Turbidity measurements were also taken at the compliance and background monitoring points at maximum four-hour intervals during active construction. Minor exceedances were occasionally noted; however, these observations were immediately communicated to Ecology and were determined to be artifacts of the natural turbidity fluctuation within Lake River. As shown in Figures 3-1 (mid-depth NTU) and 3-2 (near-

bottom NTU), the compliance and background monitoring point NTU measurements were highly correlated, showing no significant water-quality impacts during construction.

3.6 Import Material Analytical Testing

Consistent with the project specifications, fill sand was sampled and analyzed for chemical constituents prior to the import of material to the site. Composite samples were collected by the CQA officer; analyses were performed by Apex Laboratories and Pace Analytical Services, Inc. The analytical results for imported fill sand are presented in Table 3-1 and showed no exceedances of the clean fill criteria set forth in project specifications. Sample results were previously presented to Ecology; Ecology provided written approval of the sand source for project use on November 12, 2014. A data validation memorandum, laboratory reports, and chain-of custody documentation are provided in Appendix D.

3.7 Archaeological Monitoring

Consistent with COE Nationwide Permit requirements, an archaeological survey was conducted prior to construction. The archeological contractor (Willamette CRA) determined that the proposed bank stabilization and cleanup action could proceed as planned. Dredging activities were guided by an archaeological monitoring and inadvertent discovery plan developed for the site. No unanticipated archaeological resources were encountered. The monitoring documents are provided in Appendix E.

3.8 Health and Safety

MFA personnel strictly adhered to the project health and safety plan (HASP) (Appendix F) during implementation of site activities. This HASP was maintained as a living document during construction to provide updates to better describe safety procedures for new and ongoing activities.

Various contractors and subcontractors participated in the implementation of site activities. Each contractor or subcontractor firm completing work on site developed and implemented its own health and safety plan commensurate with the level of involvement in site activities.

4 REMEDIAL ACTION SUMMARY

The construction had four primary components: site preparation and removal of structures and debris; precision dredging; fill placement (clean sand, fish-mix rock, and clean soil); and landscaping and erosion control. Each component is described below with the applicable units of work.

Typical sections of the as-constructed bank and post-ENR placement bathymetry are provided in Sheets C1.1 to C1.4 in the Lake River Record Drawings.

4.1 Site Control

Horizontal and vertical survey control was established by eTrac, using standard land-surveying methods, and was consistent with the design control. The project spatial control was based on the following:

- Horizontal—Washington State Plane South, North American Datum of 1983/1991
- Vertical—Clark County, National Geodetic Vertical Datum of 1929/1947

A global positioning system (GPS) control base station was set up at the contractor's job trailer, near the geographical center of the site, to communicate with machine control installed on the dredge excavator and materials placement derrick. Roving GPS stations were set up for grade checking and location information.

All GPS systems were calibrated by eTrac and DMS before construction. Instrument calibration was periodically completed by the contractor during construction.

4.2 Site Preparation and Removal of Structures and Debris

Site preparation and removal of structures and debris include all units of work undertaken to prepare the site for remediation. This includes preparation of the materials handling area (MHA); equipment mobilization; clearing and grubbing; and pile and debris removal (in-water).

4.2.1 Materials Handling Area Preparation

The MHA was constructed by Strider Construction Company, Inc. (Strider), under a separate contract, as part of the Carty Lake Remedial Action project. During the week of August 10, 2014, Strider began excavating the existing cap in the northern portion of Cell 3 of the LRIS and stockpiling it on an impermeable liner in the cell's southern portion. Strider used excavators to remove the clean soil cap to the elevation of the demarcation fabric; excavated clean soil cap material was placed in off-road haul trucks and brought to the temporary stockpile location. The excavated clean soil cap material was placed on an impermeable liner and was approximately shaped to the finished grade contours shown on the plans.

Demarcation fabric exposed by the excavation was cut away from the edges of the excavation. The fabric was loaded into on-road haul trucks for transport and disposal at the Cowlitz County Headquarters Landfill in Castle Rock, Washington. This landfill was the destination for all waste leaving the site, including the sediment excavated from Carty Lake. During removal and stockpiling of the existing cap, the CQA officer visually verified that the existing cap was removed to the horizontal extents shown on the plans and to the elevation of the existing demarcation fabric; that the existing demarcation fabric was completely cut away and disposed of consistent with the specifications; and that material from below the demarcation fabric was completely separated from material above the demarcation fabric.

The subgrade below the demarcation fabric was regraded consistent with the plans to provide a relatively level base for the placement of ballast rock. After subgrade elevations at the MHA were achieved, MGS conducted a survey and submitted it to MFA for review and approval. MFA verified that the intention of the grading scheme was achieved and that positive drainage was established. Ballast material was sourced from the J.L. Storedahl & Sons (Storedahl) Livingston Quarry north of Camas, Washington. Strider placed and compacted ballast to a six-inch-minimum depth throughout the MHA. CSBC was sourced from the Storedahl Mountain Top Quarry in Yacolt, Washington. CSBC was placed and compacted to a two-inch-minimum depth over the previously placed ballast. The CQA officer verified that the ballast and CSBC material were placed to the minimum required depth and compacted until firm and unyielding.

A portion of the MHA (the northeast corner) was left at a "reduced section" (two inches below design grade) until the excavation of sediment was complete. This was done so that Strider would have a "working surface" to amend sediment, if necessary, without contaminating the finished surface. Sediment amendment was not required, and this area of reduced section was completed on September 29, 2014, resulting in substantial completion of the MHA. Figure 4-1 provides a general overview of the MHA layout.

4.2.2 Equipment Mobilization

Equipment was mobilized to the site via trucks beginning in September 2014. Equipment in this group included dump trucks, excavators, front-end loaders, and a job trailer. Equipment for water treatment was mobilized to the site after the start of the project and included a large diesel generator, a shaker table array, three centrifuges, several water storage tanks, rapid sand-filter pods, bag filters, and two granular-activated carbon vessels.

Mobilization of marine equipment began in early October. Marine equipment used for the project included two crane derricks; an equipment staging barge; six material barges that were rotated on and off-site for loading and placement; several small work skiffs; two tugboats; and a floating dock.

4.2.3 Clearing and Grubbing

Clearing and grubbing consisted of removing surficial debris and vegetation, along the majority of the bank, with land-based equipment. Clearing of large material was completed using excavators. All material removed during this phase was handled consistent with the project specifications. Large pieces of material were cut to manageable sizes, using torches or saws, before collection and off-haul. MFA staff were present on site to observe clearing and grubbing activities, and to ensure that work was performed consistent with the project specifications.

4.2.4 Pile Removal

Piles and dolphins were removed from Lake River by crane derrick using vibratory extraction. A floating containment boom was deployed to contain floating pile debris during pile removal. Piles were temporarily placed on a material barge and offloaded at the end of each work shift. Approximately 115 piles were removed; piles were disposed of at Headquarters Landfill in Castle

Rock, Washington. An MFA CQA officer was present on the crane derrick barge to ensure that all piles were removed and processed consistent with the project specifications.

4.3 Precision Dredging

4.3.1.1 Dredging Methods

The target dredging elevations are comprised by the neatline dredge prism and represent the vertical extent of contaminated sediment that exceeds a 30 ng/kg dioxin toxicity equivalent (MFA, 2013a). A removal grid was developed, based on the neatline dredge target, for use by the contractor to enhance the precision removal method. The grid was a digital representation of each bucket (six feet by seven feet) to be removed within the entire dredge prism. The dimensions of each grid cell were smaller than the actual bucket dimensions to provide for overlap between adjacent buckets (on all sides) during sediment removal. The grid was imported into DREDGEPACK® dredging software; this software, along with real-time kinematic global positioning system (RTK-GPS) tracking of the excavator bucket, was used during dredging to verify that sediment removal was proceeding as designed. Each grid target identified the desired dredge elevation that was read by the operator and visualized on the dredging software in three dimensions.

A Caterpillar 374 excavator, equipped with a four-cubic-yard re-handling bucket manufactured by the Young Corporation and meeting the specification requirements, was used for all project dredging. Dredge operators met the minimum experience requirements outlined in the project specifications.

The operator lowered the dredge bucket into position for each cut in a controlled fashion, guided by the dredge software with up-to-date bathymetry loaded into the program. The software allowed for the bucket and dredge targets to be visualized in plan and profile view by the operator, ensuring that the bucket was closed at the intended location and elevation. Once the bucket was fully closed, it was brought to the surface and carefully cracked open over the hopper screen to decant the retained free water. The bucket was then reclosed, placed over the materials barge, and then fully opened to deposit the dredged sediments. Water in the dredge barge hopper was pumped through a floating pipeline to the upland treatment facility within the materials handling area (MHA). Once a material barge was fully loaded, it was brought to the transload berth.

An MFA CQA officer was assigned to the dredge barge each day. The CQA officer visually observed the dredging activity to ensure that dredging was proceeding consistent with the project specifications and design, and was consistent with the CQAP. The CQA officer on board the dredge barge was able to watch a real-time feed of the dredge software on an iPad®; the iPad was also used to track dredging progress throughout the day.

4.3.1.2 Survey

Bathymetric surveys were completed periodically (multiple times per week) and submitted to the engineer to verify that dredging operations removed all material to the design template, and to provide an accounting of the in-situ volume of material for each AU. Each survey consisted of multiple tracks by a single-beam transducer; survey results were submitted as point files with spatial coordinates and

elevation. The elevation was controlled with an upland GPS base station mounted to the contractor's job trailer.

4.3.1.3 Dredging Approval

Approval units (AUs), each consisting of seven by eight bucket grid cells (49 by 48 feet square), were developed during the design phase to track and communicate progress during construction. The contractor dredged the area in each AU to the required elevation and then obtained a verification survey to demonstrate that the elevation had been met. Areas within each AU that were not within specification were identified by the engineer and re-dredged by the contractor. Prior to placement of the ENR sand layer, a second verification survey was collected by the contractor and evaluated by the engineer to confirm that the AU met the specification requirements.

4.3.1.4 Compliance Monitoring

As described in the Lake River pre-design sampling report (MFA, 2013), high-resolution sediment sampling was conducted to fully delineate the lateral and vertical extents of contamination; the dredge prism was conservatively designed to remove contaminants. The precision dredging, coupled with RTK-GPS, ensured that the dredge-prism target depths and extents were achieved. Confirmation monitoring immediately after dredging activities (prior to ENR placement) was therefore not required. Baseline monitoring (year zero) was conducted in July 2015 after remedy completion to quantify sediment concentrations relative to the CUL. Compliance monitoring is also required in years two, five, and ten after remedy completion. The year zero (baseline) monitoring results show that sediment concentrations meet the CUL and that a significant reduction in dioxin concentrations has been attained (MFA, 2015). Future compliance monitoring efforts will be to further quantify concentration trends over time.

4.4 Sediment Transload

The contractor initially set up a hydraulic (pipeline) transload scheme whereby dredged sediment was loaded into a hopper on the dredge barge, was mixed with river water to create a slurry, and was pumped to solids separation/dewatering equipment within the MHA. This method was soon abandoned due to pipeline clogging and dewatering equipment failures; the contractor relied upon the placement of dredged sediment directly into sediment materials barges for the vast majority of the dredging project.

To allow sediment materials barges to be unloaded on site, the contractor constructed the temporary offload berth at the western terminus of Division Street. The offload berth consisted of a temporary dock and an elevated platform for a long-reach excavator. The temporary dock was constructed perpendicular to the shoreline and was held in place by spuds. The elevated platform was constructed from rock enclosed on three sides by ecology blocks.

Loaded materials barges were brought to the offload berth and tied to the temporary dock. The long-reach excavator was used to transfer sediment from the materials barge to on-site haul trucks. Areas under the swing path of the excavator, and where the on-site haul trucks were loaded, were lined with plastic sheeting to contain sediment drippings. This sheeting was cleaned or replaced as needed during

each shift. Prior to loading sediment in each haul truck, a bucket of sawdust was placed near the tailgate to help seal the tailgate and prevent dripping during transit to the MHA.

MFA provided continuous oversight of the transload activities multiple times each workday to ensure that sediment was not being spilled into the waterway or dripped onto Division Street.

4.5 Sediment Amendment, Transport, and Disposal

The on-site haul trucks brought sediment from the temporary offload berth to the MHA. Once in the MHA, the trucks backed up to a row of Ecology blocks and dumped sediment underneath the large tent. Portland cement was added to incoming sediment and the cement was allowed to hydrate, reducing the free-water content so that sediment would pass the paint filter test to meet disposal requirements. Amended sediment was then loaded into over-the-road haul trucks to be transported to the landfill. Initially, sediment was disposed of in the Headquarters Landfill in Castle Rock, Washington. In late November 2014, the haul routes within the Headquarters Landfill became impassable due to inclement weather. At this point, DMS began sending sediment to the Wasco County Landfill in The Dalles, Oregon for disposal. The Wasco County Landfill was used exclusively for the remainder of the project. In total, over 17,500 tons of amended sediment was disposed of in the two landfills.

4.6 Water Treatment

Water decanted directly from the dredge bucket and free water that decanted from sediment within the materials barges was pumped through a floating pipeline to the on-site water treatment system within the MHA. This water was treated by several unit processes prior to discharge to Lake River (see Figure 4-2); these included a vibratory screen, sedimentation basins, rapid sand filters, bag/cartridge filters, activated carbon adsorption, and carbon dioxide addition for pH adjustment prior to discharge back to Lake River. Sludge that formed within the sedimentation basins was sent to a centrifuge to remove excess water; centrifuge cake was mixed with transloaded sediment for offsite disposal. Stormwater that accumulated within the MHA was also treated by this system. Discharge water was continuously monitored for both turbidity and pH; the system included the capability to automatically recirculate discharge water that did not meet the water-quality criteria for either parameter. MFA performed daily QC discharge monitoring for both turbidity and pH. Weekly grab samples were collected for laboratory analysis of pentachlorophenol, benzo(a)pyrene, diesel-range organics, and gasoline-range organics. The results of the treated water-monitoring effort were submitted to Ecology during construction as part of the NPDES construction stormwater permit requirements, and to fulfill the substantive requirements of the 401 water-quality certification. These data are not repeated in this report.

4.7 Fill Placement

Both the ENR sand and the fish mix were obtained from the Santosh Aggregate Plant in Scappoose, Oregon and delivered by barge to the site. The ENR sand source was sampled by MFA consistent with the specification requirements (see Section 3.6). Prior to delivery to the site, MFA visited the source of the fish-mix rock and visually inspected the material for compliance with the specifications.

4.7.1 Clean Sand for ENR

To minimize the possibility of mobilizing any generated residuals and to reduce their contaminant concentration after dredging, an ENR layer composed of approximately one or two feet of clean river sand, was placed over the dredged surface and selected adjacent areas. In total, nearly 14,500 tons of clean sand was placed as an ENR layer. Sand-cap placement methods, sampling and depth verification, and approvals are described below.

4.7.1.1 Sand Cap Placement Methods

The ENR sand layer was placed in Lake River by primarily using a barge-mounted crane derrick fitted with a five-cubic-yard clamshell bucket. After dredging was completed and the equipment was available for use, the barge-mounted excavator fitted with the Young's bucket was also used for sand placement. In both cases, the bucket was held just above water surface and was slowly opened while translating laterally across the AU. Sand was placed using a grid programmed in the contractor's on-board software package to account for bucket capacity and desired placement depth for each lift.

Prior to placement, sand was stored on barges transported from the Santosh mining site. Barges were typically rotated daily during ENR sand placement; DMS could place up to two full barge loads per workday.

Prior to placement of ENR sand, the contractor performed a placement pilot test on a material barge with the CQA officer and project engineer present, to verify that placement methods were repeatable and resulted in the required thicknesses. Sand was placed from the water surface and allowed to spread and fall to the bottom. Placement of the sand layer was completed in two lifts, of six inches each, for one-foot sand thickness areas, and four lifts of six inches each for two-foot sand thickness areas.

A MFA CQA officer was assigned to the ENR placement barge at all times when ENR sand was being placed. The CQA officer visually observed the ENR placement to ensure that sand was placed consistent with the project specifications, design, and consistent with the CQAP. The CQA officer on board the ENR placement barge was able to watch a real-time feed of the ENR placement software on an iPad®.

4.7.1.2 Sand Depth Verification and Approval

The placement depth of clean sand was verified by a combination of CQA activities. These included: draft measurements of the sand barges before and after placement in each AU; visual inspection by the CQA officer that material was placed in general conformance with the specifications and pilot test methods; and counting the number of buckets placed in each AU. Each pass of the sand-placement bucket was tracked by RTK-GPS, was visible to both the operator and CQA officer in real-time on screens (bucket position was shown over a background image of the approval grid), and was recorded; these tracks were periodically provided to MFA by DMS.

As surveys were performed of both the post-dredge and final bathymetry, a comparison of these surfaces provided additional sand depth verification. However, as these comparisons were not

available in real-time, this was not actively used by the CQA officer to approve sand placement in an AU.

Immediately prior to and after placement of the ENR layer in each AU, the CQA officer measured the freeboard of the material barge at each corner with a graduated electronic water-level meter. These measurements were immediately entered into a spreadsheet; the spreadsheet was used to convert the measurements to weight and to record the weight of sand placed in each AU. The CQA officer also visually observed placement methods and calculated volume on an area-wide basis to verify that the appropriate quantity of sand had been placed in each AU.

Table 4-1 displays the tonnage placed in each AU from barge draft measurements. As shown in the last column of Table 4-1, "percent of design tonnage placed," there were (seven) AUs with sand cap placement listed as less than 80 percent by weight. For AUs A3 and A4, the operator avoided placing sand on heavy vegetation. These AU limits, as shown on the drawings, extended too far up the shore, likely due to the surveyor's inability to collect continuous topographic survey information in the dense vegetation; these AUs should have been trimmed to the OHW mark during design, which would have reduced the calculated design tonnage. For AU B26, the barge was listing heavily, which hampered the accuracy of the conversion between draft measurements and weight; the CQA officer verified placement by bucket count and by observations of the bucket tracking across this approval unit. For all other AUs that are shown as deficient by weight on Table 4-1, a volume analysis of post-dredge bathymetry and final grade indicated that sufficient material was placed to satisfy the ENR requirement.

4.7.2 Bank Stabilization

A layer of geotextile filter fabric and then erosion-resistant fish mix was placed to support the bank along the length of the LRIS. Fish mix was placed according the project specifications and at a slope no steeper than 4H:1V, with a minimum thickness of two feet. The fish-mix stabilization layer was a well-graded mixture of river cobble and gravel. In total, nearly 26,000 tons of fish mix was placed on the bank of Lake River.

4.7.2.1 Subgrade Preparation and Placement of Filter Fabric

Prior to placement of geotextile filter fabric, the subgrade surface was visually inspected to ensure that the surface was smooth and free of protrusions. Filter fabric was installed with an anchor trench at the upslope extent and was rolled out downslope. The CQA officer inspected the placement of filter fabric geotextile for conformance with the plans and specifications.

4.7.2.2 Fish-Mix Placement from the Water

The fish mix was placed in Lake River and along the bank, covering the geotextile fabric using a barge-mounted crane derrick fitted with a five-cubic-yard clamshell bucket. The bucket was held above the water surface and was slowly opened without damaging the underlying fabrics. Fish mix was placed using a grid programmed in the contractor's on-board software package to account for bucket capacity and desired placement depth.

4.7.2.3 Fish-Mix Placement from Land

Fish-mix fine grading was performed by a long-reach excavator deployed from the recently-placed rock itself. A grade checker used an RTK-GPS rover to direct the fine grading effort above the waterline.

4.7.2.4 Fish-Mix Rock Approvals

Placement of fish-mix rock along the shore was approved based on visual observations of rock installation and evaluation of the post-construction survey. During construction, the MFA engineers verified that geotextile filter fabric was anchored properly at the top of the fish-mix slopes, that the fabric was installed with appropriate overlap, and that the filter fabric extended to approximately the extents of clean sand placement (waterward). MFA engineers also observed placement of the rock to ensure that it was placed gently and evenly over the filter fabric to prevent tearing or bunching of the filter fabric.

Grade was checked in the field during installation by a member of the contractor's staff using an RTK-GPS rover. The engineer did not intend for the fish-mix rock layer to meet very tight line and grade tolerances. Rather, it was intended that the rock be placed consistent with the design intent (minimum two-feet-thick layer below elevation 11 NGVD, with surface slope no greater than 4H:1V).

4.7.3 Excavation at the Western Terminus of Division Street

A portion of the upland site at the western terminus of Division Street, between the clean soil cap placed on Cell 2 to the north and the clean soil cap placed on Cell 3 to the south, had not been capped. This area was regraded after sediment transload to allow for placement of a two-feet clean soil and gravel cap and to complete the LRIS cap.

4.7.4 Clean Soil Placement

A portion of the upland clean soil cap on Cell 3 was removed as part of the Carty Lake Sediment Remedy project to allow construction of the material handling area (MHA). The upland clean soil cap in the MHA, which had been stockpiled by Strider, was restored in February 2015 after the completion of dredging. Clean soil cap was also placed at the western terminus of Division Street. DMS submitted survey information of the demarcation fabric (pre-cap restoration surface), as well as the clean-cap finished grade. MFA compared this survey information to ensure that the minimum two-feet cap thickness had been restored across the MHA and at the western terminus of Division Street.

4.7.4.1 Clean Soil Placement Methods

After demobilization of equipment from the MHA, the existing gravel- and cobble-size material, used to stabilize MHA construction entrances and all other additional sand and rock material, were excavated and spread evenly across the floor of the MHA. The contractor surveyed the finished subgrade elevations within the MHA and submitted this data for engineer approval prior to the placement of demarcation fabric. This survey was approved by MFA prior to placement of

demarcation fabric. The CQA team also visually verified that the subgrade surface was smooth and free of protrusions. The CQA team inspected the placement of demarcation fabric for conformance with the plans and specifications, including verification of the specified six-inch minimum overlap at seams. Subsequent restoration of the minimum two-feet-thick clean soil cap across the MHA was allowed only after demarcation fabric was in place and verified by the CQA team.

Clean soil was placed in two roughly one-foot-thick lifts. The first lift of clean soil was pushed out from the stockpile and spread over the demarcation fabric by two dozers. Once in place, this lift was compacted by a Caterpillar 815 sheepsfoot compactor. The second lift of clean soil was spread and compacted by the same equipment; the surface was fine graded and then slightly scarified to enhance vegetation establishment prior to survey. The restored clean soil cap surface was stabilized by hydroseeding and application of straw mulch on February 25, 2015. The CQA team observed the placement of clean soil cap for conformance with the plans and specifications.

4.7.4.2 Clean Soil Placement Approvals

The Contractor was required to submit a survey of the finished clean soil cap. MFA verified that the clean soil cap meets the requirements of the CAP.

4.8 Landscaping and Erosion Control

The landscaping installed along the Lake River shoreline was designed to improve the physical characteristics of the riverbank and establish a native plant community. Three planting groves were established to meet the COE Nationwide Permit 38 requirements.

4.8.1 Erosion Control Methods

Installation of erosion and sediment controls were consistent with the best management practices described in the Stormwater Management Manual for Western Washington and with the requirements of the Ecology 1200-C NPDES permit for construction activities. The area that was restored with a clean soil cap was seeded with native grasses to provide long-term erosion control.

To protect against erosion during high-water events, turf reinforcement mat (TRM) was placed on the existing upland clean soil cap above the fish-mix layer to an elevation of approximately 25 feet National Geodetic Vertical Datum of 1929/1947 (NGVD) and to extend down into the fish-mix layer for additional anchoring. The TRM was held in place by anchor trenches along both the top of bank and the bottom of the bank, where soil abuts fish-mix rock. At the top of bank, the TRM was placed in a one-foot deep and wide trench, backfilled with soil, overlapped upon itself, and secured with a 10-inch metal staple. The bottom of the TRM was placed into a one-foot deep and wide trench and backfilled with soil. Fish-mix rock was placed over both the bottom TRM anchor trench and adjacent upper filter-fabric anchor trench to further stabilize this transition.

Where woody vegetation was installed into the TRM, a cross cut or single cut was made; the plant was inserted into the soil below, and each cut was secured with a 10-inch metal staple.

4.8.2 Landscaping Methods

The new plantings included native groundcover grasses and perennials, shrubs, and trees common to the area. Species were selected consistent with the Ecology-approved planting list. The planting areas were located on the riverbank, generally between OHW and the gravel trail in the Cell 2 north, Cell 2 archaeological, and Cell 3 subreaches (see Drawing L1.0). The planting plan was designed to cluster native trees and shrubs into three distinct groves to provide structural diversity while protecting scenic views. The groves were planted consistent with the LRRE (see Appendix G) and consistent with the COE Nationwide Permit 38. The planting groves approximately spanned 500 lineal feet. The open areas between the groves were planted with native grasses. The total native plant area extended the length of the LRIS bank (approximately 1,750 feet) and was approximately 2.7 acres. Per the LRRE, monitoring of the planting-grove vegetation is to be annually conducted for five years (2016 through 2020). Corresponding vegetation monitoring reports evaluating the landscape conditions, relative to performance standards, are submitted to the COE for review.

5 ISSUES ENCOUNTERED AND RESOLUTIONS

5.1 Requests for Information

Three RFIs were issued by the contractor and responded to by the engineer. These documents are described in this section. Copies of each RFI are provided in Appendix H.

5.1.1 RFI 001—Dredging Sequence

RFI 001 was issued to request a deviation from the specifications regarding the sequence of dredging. The specifications stated that dredging should begin at the upstream (south Lake River) removal units and proceed downstream (north Lake River), thereby minimizing the potential for gravity-driven migration (net current direction) of suspended sediments seeking to re-deposit over previously dredged areas. These specifications also stated that dredging should begin at the highest elevation and work toward the lowest, thereby minimizing the potential for sediment sloughing into areas already dredged. The contractor requested to begin at AU D29 (at the downstream end of the upstream dredge prism) and proceed toward the shore and upstream for the following reasons: greater efficiency for pipeline management; reduction in potential navigation conflicts between the dredging project and recreational boaters; shorter pipeline and subsequent greater efficiency for slurry transmission; the opportunity to start placing the ENR sand sooner in the project schedule, where both tasks can be conducted concurrently, thereby providing opportunity to make up time in the schedule; sand placement would be proposed to start after AU A46, B46, and C46 are completed and accepted; and enough separation between the two tasks to provide a safe work site. This change was allowed by MFA.

5.1.2 RFI 002—Geotextile Color

RFI 002 was submitted to clarify that the filter fabric underneath the clean soil cap in the MHA was required to be orange. The engineer responded that the specified orange filter fabric was intended to be used as demarcation fabric within the MHA. The filter fabric underneath the fish-mix rock does not need to be orange.

5.1.3 RFI 003—Fish-Mix Rock Near Outfalls

RFI 003 was submitted to clarify the transition between the existing riprap splash pads and the fish-mix rock below the stormwater outfalls. No formal response was provided for this RFI. Instead, MFA and DMS staff discussed the intended transition in the field.

5.2 Field Directive

One FD was issued during construction to direct the contractor on additional work or design changes. A copy of the FD is included in Appendix H. FD 001 was issued by the engineer to describe modifications to the dredge prism. The contractor encountered hard-packed soil material at the end of Division Street that was not able to be removed with the Young bucket. The contractor was able to remove the majority of the sediment to the target elevation, but approximately eight cubic yards of material in AUs A27, A28, B27, and B28 remained in place, generally less than one foot above the target elevation. The FD was issued to allow DMS to proceed without removing material to the full target elevation within these AUs. The limits of fish-mix rock and filter fabric were extended over this hard-packed material left in place to eliminate exposure and further reduce the potential for migration of material from this area.

6 FINAL INSPECTION

A final progress meeting and site walk with DMS took place on February 25, 2015. Attending the inspection were Mr. Kalloch Fox of DMS and Mr. Joshua Elliott, PE, and Mr. Connor Lamb, PE, of MFA. The engineer gave verbal notice of substantial completion of DMS contract at this time.

A final site walk with PBI took place on October 01, 2015. Attending the inspection were Mr. Scott Paul of PBI and Mr. Curtis Riley, RLA, of MFA. At the conclusion of the final site inspection, Mr. Riley gave verbal notice of substantial completion of PBI's contract; this does not include PBI's ongoing maintenance requirements as part of the contract.

7 OPERATION AND MAINTENANCE REQUIREMENTS

A Comprehensive Operation and Maintenance Plan (COMP) that includes operation and maintenance plans for Lake River will be prepared by the Port and approved by Ecology (WAC 173-340-400). The COMP will summarize requirements for inspection and maintenance of the remedy. This includes the following:

- Sediment sampling and analysis plan describing sampling objectives and methods that will be used to meet compliance monitoring requirements (see Section 4.3.1.4).

- Bank integrity monitoring plan describing the monitoring procedures designed to evaluate changes in stability along the bank; identify and evaluate any changes over time; and determine any corrective actions.

- The LRRE (vegetation monitoring plan), which describes the COE Nationwide Permit 38 (NWS-2013-875) monitoring and maintenance requirements for the planting groves, which are subject to required performance standards.

- A general vegetation maintenance plan that summarizes the monitoring and maintenance for the three planting groves, as well as grassy and rounded-rock areas that are not subject to permit requirements.

8 CERTIFICATION STATEMENT

The construction oversight and project engineering services described in this report were performed by the engineer on behalf of the Port for all construction activities related to the Lake River Sediment Remediation project. Based on the observations made during construction, material testing results, and final product constructed on site, it is the opinion of the engineer that the sediment remedy was constructed consistent with standard trade practices, in substantial compliance with the technical specifications, and consistent with the design intent as approved by Ecology and the COE.

LIMITATIONS

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

REFERENCES

Ecology. 2013a. Cleanup action plan, former Pacific Wood Treating Co. site. Washington State Department of Ecology. November 5.

Ecology. 2013b. Consent Decree No. 13-2-03830-1, former Pacific Wood Treating Co. site. Washington State Department of Ecology. November 15.

MFA. 2013a. Lake River remedy predesign sampling report. Prepared for the Port of Ridgefield. Maul Foster & Alongi, Inc., Vancouver, Washington. June 14.

MFA. 2013b. Final former PWT site remedial investigation and feasibility study. Prepared for the Port of Ridgefield. Maul Foster & Alongi, Inc., Vancouver, Washington. July 1.

MFA. 2014a. Lake River 90% remedial design report, Lake River remedial action, 111 W Division Street, Ridgefield, Washington. Maul Foster & Alongi, Inc., Vancouver, Washington. March 3.

MFA. 2015. Lake River sediment monitoring report. Prepared for the Port of Ridgefield. Maul Foster & Alongi, Inc., Vancouver Washington. July 1.

TABLES

Table 3-1
Imported Fill Sand Analytical Results
Lake River Construction Completion Report
Port of Ridgefield
Ridgefield, Washington

Sample Name: Collection Date:	Clean Fill Criteria	Natural Background Concentrations, Clark County	SAND 30 COMP 10/7/2014	SAND 30 COMP-DUP 10/7/2014
Metals (mg/kg)				
Arsenic	5.81	5.81	**1.26**	**1.01** J
Cadmium	0.93	0.93	**0.147** J	**0.153** J
Chromium	72	26.57	**2.85**	**2.52**
Copper	400	34.43	**4.05**	**3.26**
Lead	24.02	24.02	**2.53**	**2.13**
Mercury	0.04	0.04	0.0421 U	0.0436 U
Nickel	26	21.04	**5.39**	**4.71**
Selenium	11	NV	0.526 U	0.545 U
Silver	0.57	NV	0.105 U	0.109 U
Zinc	3200	95.52	**27.9**	**21.8**
Dioxins/Furans (ng/kg)				
1,2,3,4,6,7,8-HpCDD	2.5	NV	**0.56** J	0.38 U
1,2,3,4,6,7,8-HpCDF	2.5	NV	0.14 U	0.13 U
1,2,3,4,7,8,9-HpCDF	2.5	NV	0.19 U	0.2 U
1,2,3,4,7,8-HxCDD	2.5	NV	0.13 U	0.14 U
1,2,3,4,7,8-HxCDF	2.5	NV	0.12 U	0.12 U
1,2,3,6,7,8-HxCDD	2.5	NV	0.14 U	0.11 U
1,2,3,6,7,8-HxCDF	2.5	NV	0.11 U	0.12 U
1,2,3,7,8,9-HxCDD	2.5	NV	0.12 U	0.12 U
1,2,3,7,8,9-HxCDF	2.5	NV	0.14 U	0.13 U
1,2,3,7,8-PeCDD	1.0	NV	0.12 U	0.15 U
1,2,3,7,8-PeCDF	2.5	NV	0.16 U	0.12 U
2,3,4,6,7,8-HxCDF	2.5	NV	0.11 U	0.11 U
2,3,4,7,8-PeCDF	1.0	NV	0.15 U	0.12 U
2,3,7,8-TCDD	1.0	NV	0.12 U	0.13 U
2,3,7,8-TCDF	1.0	NV	0.068 U	0.11 U
OCDD	5.0	NV	**3.4** J	2.6 U
OCDF	5.0	NV	0.36 U	0.41 U
Total HpCDDs	NV	NV	**1.1** J	0.14 U
Total HpCDFs	NV	NV	0.16 U	0.16 U
Total HxCDDs	NV	NV	**0.25** J	**0.27** J
Total HxCDFs	NV	NV	0.12 U	0.12 U
Total PeCDDs	NV	NV	0.12 U	0.15 U
Total PeCDFs	NV	NV	0.15 U	0.12 U
Total TCDDs	NV	NV	0.12 U	0.13 U
Total TCDFs	NV	NV	**1.1** J	**0.59** J
Dioxin/Furan TEQ (1/2 EDL)	5	NV	**0.20** J	**0.21** J

Table 3-1
Imported Fill Sand Analytical Results
Lake River Construction Completion Report
Port of Ridgefield
Ridgefield, Washington

Sample Name: Collection Date:	Clean Fill Criteria	Natural Background Concentrations, Clark County	SAND 30 COMP 10/7/2014	SAND 30 COMP-DUP 10/7/2014
PCBs (ug/kg)				
Aroclor 1016	NV	NV	1.53 U	1.85 U
Aroclor 1221	NV	NV	1.53 U	1.85 U
Aroclor 1232	NV	NV	1.53 U	1.85 U
Aroclor 1242	NV	NV	1.53 U	1.85 U
Aroclor 1248	NV	NV	1.53 U	1.85 U
Aroclor 1254	NV	NV	1.53 U	1.85 U
Aroclor 1260	NV	NV	1.53 U	1.85 U
Aroclor 1262	NV	NV	1.53 U	1.85 U
Aroclor 1268	NV	NV	1.53 U	1.85 U
Total PCB Aroclors[a]	5	NV	1.53 U	1.85 U
SVOCs (ug/kg)				
3- & 4-Methylphenol	260[b]	NV	3.38 U	3.47 U
Benzoic acid	2900	NV	170 U	174 U
Bis(2-ethylhexyl)phthalate	500	NV	40.6 U	41.7 U
Dibenzofuran	200	NV	1.35 U	1.39 U
Di-n-butyl phthalate	380	NV	13.5 U	**14.2** J
Di-n-octyl phthalate	39	NV	13.5 U	13.9 U
Pentachlorophenol	200	NV	13.5 U	13.9 U
Phenol	120	NV	2.71 U	2.78 U
PAHs (ug/kg)				
Acenaphthene	NV	NV	4.25 U	5.23 U
Acenaphthylene	NV	NV	4.25 U	5.23 U
Anthracene	NV	NV	4.25 U	5.23 U
Benzo(a)anthracene	NV	NV	4.25 U	5.23 U
Benzo(a)pyrene	NV	NV	4.25 U	5.23 U
Benzo(b)fluoranthene	NV	NV	4.25 U	5.23 U
Benzo(ghi)perylene	NV	NV	4.25 U	5.23 U
Benzo(k)fluoranthene	NV	NV	4.25 U	5.23 U
Carbazole	NV	NV	4.25 U	5.23 U
Chrysene	NV	NV	4.25 U	5.23 U
Dibenzo(a,h)anthracene	NV	NV	4.25 U	5.23 U
Fluoranthene	NV	NV	4.25 U	5.23 U
Fluorene	NV	NV	4.25 U	5.23 U
Indeno(1,2,3-cd)pyrene	NV	NV	4.25 U	5.23 U
Naphthalene	NV	NV	4.25 U	5.23 U
Phenanthrene	NV	NV	4.25 U	5.23 U
Pyrene	NV	NV	4.25 U	5.23 U
Total PAHs[a]	17000	NV	4.25 U	5.23 U

Table 3-1
Imported Fill Sand Analytical Results
Lake River Construction Completion Report
Port of Ridgefield
Ridgefield, Washington

Sample Name: Collection Date:	Clean Fill Criteria	Natural Background Concentrations, Clark County	SAND 30 COMP 10/7/2014	SAND 30 COMP-DUP 10/7/2014
Organochlorine Pesticides (ug/kg)				
4,4'-DDD	310	NV	0.761 U	0.735 U
4,4'-DDE	100	NV	0.761 U	0.735 U
4,4'-DDT	21	NV	0.761 U	0.735 U
Dieldrin	4.9	NV	0.761 U	0.735 U
Endrin ketone	8.5	NV	0.761 U	0.735 U
Lindane (gamma-BHC)	7.2	NV	0.761 U	0.735 U
TPH (mg/kg)				
Diesel	340	NV	25 U	25 U
Lube Oil	3600	NV	50 U	50 U

NOTES:

Detected results are in bold font. Non-detect results are not evaluated against screening criteria.

Shaded results exceed one or more screening level values.

BHC = beta-hexachlorocyclohexane.

J = the result is an estimated value.

mg/kg = milligrams per kilogram.

ng/kg = nanograms per kilogram.

NV = no value.

PAH = polycyclic aromatic hydrocarbon.

PCB = polychlorinated biphenyl.

SVOC = semivolatile organic compound.

TEQ = toxicity equivalence.

TPH = total petroleum hydrocarbon.

U = the result is non-detect.

ug/kg = micrograms per kilogram.

UJ = the result is non-detect and an estimated value.

[a]When all results for a summed result are non-detect, the highest reporting limit is used.

[b]Value is for 4-methylphenol.

Table 4-1
ENR Sand Barge Draft Tonnage
Lake River Construction Completion Report
Port of Ridgefield
Ridgefield, Washington

Approval Unit	Design Tonnage	Drafted Tonnage	Percent of Design Tonnage Placed
Approval Unit A			
A01	70.11	58.9	84%
A02	87.32	89.6	103%
A03	84.93	59.4	70%
A04	68.58	44.1	64%
A26	14.00	29.1	208%
A27	22.70	25.3	111%
A28	19.26	27.5	143%
A29	23.55	26.7	113%
A30	43.38	57.5	133%
A31	46.95	79.8	170%
A32	28.22	27.7	98%
A33	26.82	24.0	89%
A34	26.65	19.1	72%
A35	35.97	-	-
A36	51.33	72.6	141%
A37	57.21	50.2	88%
A38	57.62	59.9	104%
A39	49.50	50.9	103%
A40	45.44	58.1	128%
A41	36.50	33.6	92%
A42	15.26	17.1	112%
A43	4.73	4.1	87%
A44	35.96	74.9	208%
A45	107.95	100.4	93%
A46	87.65	86.1	98%
Approval Unit B			
B02	90.11	121.7	135%
B03	104.53	105.5	101%
B04	104.53	105.1	101%
B05	87.15	79.2	91%
B06	80.62	92.0	114%
B07	66.99	70.0	104%
B08	52.16	50.0	96%
B09	34.44	30.6	89%
B10	22.27	30.9	139%

Table 4-1
ENR Sand Barge Draft Tonnage
Lake River Construction Completion Report
Port of Ridgefield
Ridgefield, Washington

Approval Unit	Design Tonnage	Drafted Tonnage	Percent of Design Tonnage Placed
B12	9.30	-	-
B11	18.70	29.4	157%
B16	22.40	-	-
B17	88.94	106.4	120%
B18	113.76	122.8	108%
Approval Unit B cont'd			
B19	178.48	191.4	107%
B20	177.33	200.5	113%
B21	159.68	152.7	96%
B22	107.82	104.1	97%
B23	65.79	63.8	97%
B24	86.23	83.2	96%
B25	98.08	93.0	95%
B26	104.53	63.7	61%
B27	104.53	191.6	183%
B28	104.53	120.6	115%
B29	104.53	124.4	119%
B30	104.53	118.7	114%
B31	104.53	127.4	122%
B32	104.53	171.3	164%
B33	104.53	93.9	90%
B34	104.53	104.9	100%
B35	104.53	124.5	119%
B36	104.53	98.7	94%
B37	104.53	96.0	92%
B38	104.53	99.2	95%
B39	104.53	127.2	122%
B40	104.53	107.4	103%
B41	104.53	99.0	95%
B42	104.53	96.8	93%
B43	104.53	98.3	94%
B44	104.53	105.8	101%
B45	104.53	123.5	118%
B46	61.11	57.2	94%
Approval Unit C			
C02	23.87	43.4	182%

Table 4-1
ENR Sand Barge Draft Tonnage
Lake River Construction Completion Report
Port of Ridgefield
Ridgefield, Washington

Approval Unit	Design Tonnage	Drafted Tonnage	Percent of Design Tonnage Placed
C03	92.63	102.4	111%
C04	104.53	108.7	104%
C05	104.53	109.1	104%
C06	100.97	104.6	104%
C07	104.53	107.6	103%
C08	104.53	105.4	101%
C09	104.53	105.7	101%
C10	104.53	141.0	135%
C11	104.53	89.2	85%
C12	104.53	136.5	131%
Approval Unit C cont'd			
C13	93.75	92.8	99%
C14	68.69	78.4	114%
C15	90.03	120.9	134%
C16	104.53	89.6	86%
C17	147.76	184.2	125%
C18	144.13	159.8	111%
C19	171.70	163.3	95%
C20	163.33	187.6	115%
C21	150.05	161.6	108%
C22	129.92	135.9	105%
C23	104.53	105.0	100%
C24	104.53	113.2	108%
C25	104.53	102.2	98%
C26	104.53	114.4	109%
C27	104.53	100.9	97%
C28	104.53	107.2	103%
C29	104.53	99.0	95%
C30	104.53	103.8	99%
C31	104.53	104.0	99%
C32	104.53	95.9	92%
C33	104.53	102.1	98%
C34	104.53	99.1	95%
C35	104.53	109.6	105%
C36	104.53	138.1	132%
C37	104.53	112.3	107%

Table 4-1
ENR Sand Barge Draft Tonnage
Lake River Construction Completion Report
Port of Ridgefield
Ridgefield, Washington

Approval Unit	Design Tonnage	Drafted Tonnage	Percent of Design Tonnage Placed
C38	104.53	120.1	115%
C39	104.53	103.0	99%
C40	104.53	107.7	103%
C41	104.53	96.3	92%
C42	104.53	133.2	127%
C43	104.53	120.4	115%
C44	104.53	110.9	106%
C45	38.89	47.6	122%
Approval Unit D			
D05	74.25	76.4	103%
D06	98.44	122.0	124%
D07	104.53	94.5	90%
D08	104.53	93.0	89%
D09	104.53	110.2	105%
D10	104.53	108.3	104%
Approval Unit D cont'd			
D11	104.53	110.7	106%
D12	104.53	90.8	87%
D13	104.53	137.0	131%
D14	104.53	111.8	107%
D15	104.53	105.9	101%
D16	100.37	106.1	106%
D17	87.12	108.6	125%
D18	101.55	121.6	120%
D19	104.53	100.1	96%
D20	104.53	114.1	109%
D21	104.53	110.9	106%
D22	104.53	109.3	105%
D23	104.53	102.0	98%
D24	103.01	101.9	99%
D25	100.19	98.3	98%
D26	90.07	89.0	99%
D27	70.63	85.4	121%
D28	60.98	60.8	100%
D29	60.98	61.8	101%
D30	59.41	58.9	99%

Table 4-1
ENR Sand Barge Draft Tonnage
Lake River Construction Completion Report
Port of Ridgefield
Ridgefield, Washington

Approval Unit	Design Tonnage	Drafted Tonnage	Percent of Design Tonnage Placed
D31	30.33	30.3	100%
D32	21.78	24.6	113%
D33	21.78	22.5	103%
D34	34.03	30.8	91%
D35	55.62	71.6	129%
D36	60.98	74.1	122%
D37	57.54	62.3	108%
D38	34.85	34.4	99%
D39	42.56	38.2	90%
D04	31.50	31.1	99%
D40	72.43	72.2	100%
D41	95.65	115.7	121%
D42	102.11	127.8	125%
D43	92.21	88.2	96%
D44	40.48	46.1	114%
Approval Unit E			
E07	35.08	44.2	126%
E08	69.71	63.3	91%
E09	89.22	103.8	116%
E10	104.53	101.2*	97%
Approval Unit E cont'd			
E11	104.53	95.5	91%
E12	104.53	96.2	92%
E13	75.51	94.1	125%
E14	35.24	48.2	137%
E15	35.04	40.8	116%
E16	20.21	30.5	151%
E18	13.16	13.3	101%
E19	64.14	65.9	103%
E20	78.00	85.9	110%
E21	78.00	83.4	107%
E22	78.00	69.9*	90%
E23	64.29	64.8	101%
E24	16.46	30.6	186%
E42	9.79	12.5	128%

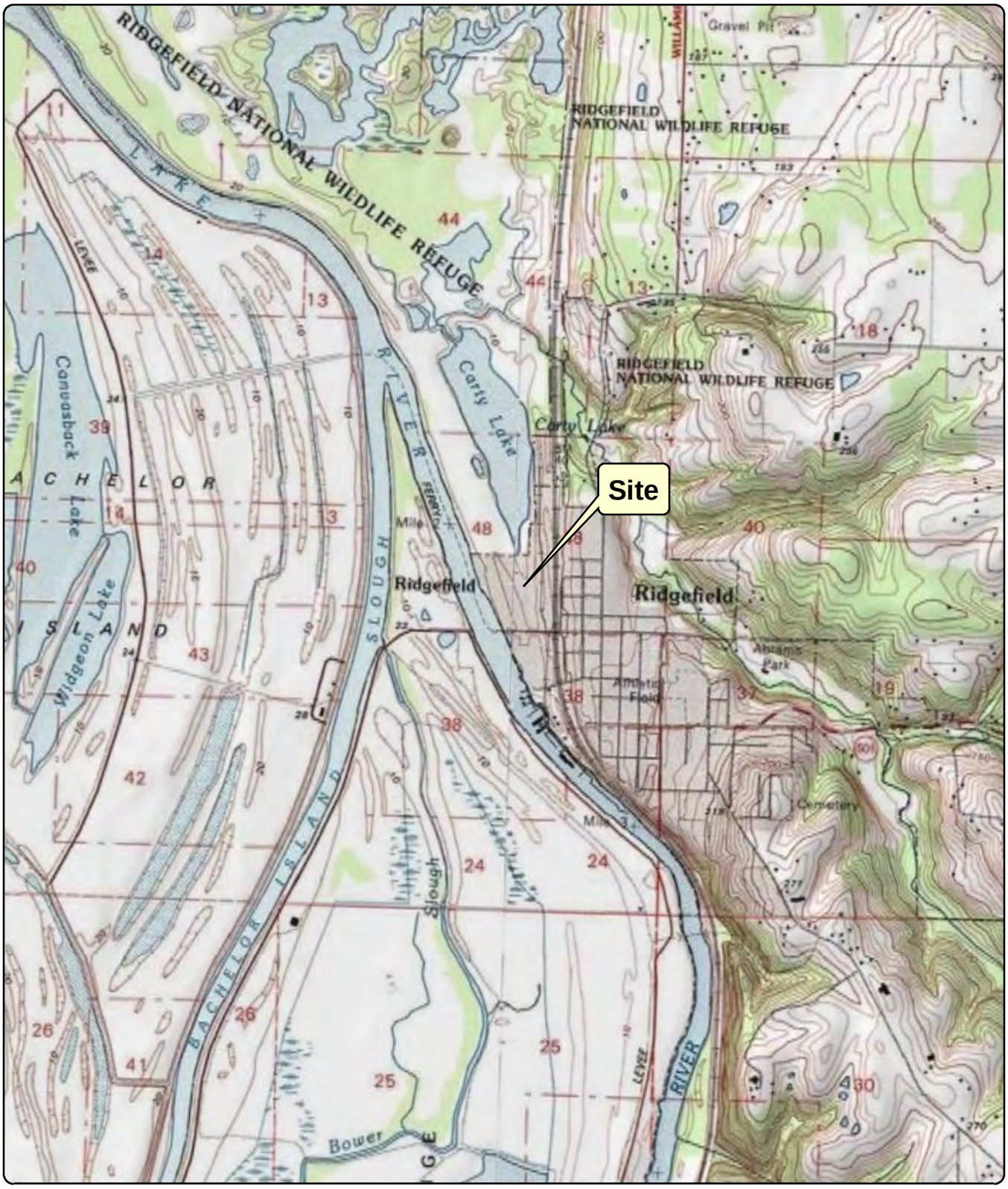
Notes:

Table 4-1
ENR Sand Barge Draft Tonnage
Lake River Construction Completion Report
Port of Ridgefield
Ridgefield, Washington

Approval Unit	Design Tonnage	Drafted Tonnage	Percent of Design Tonnage Placed

* = Placed Tonnage calculated from volume surface analysis of post dredge bathymetry compared to final grade

FIGURES



Source: Topographic Quadrangle obtained from ArcGIS Online Services/NGS-USGS TOPO! US Geological Survey (1999)
7.5-minute topographic quadrangle: Ridgefield
Address: Lake River Industrial Site
111 W. Division Street, Ridgefield, WA 98642
Section: 24 Township: 4N Range: 1W Of Willamette Meridian

Figure 1-1
Site Location

Lake River Construction Completion Report
Port of Ridgefield
Ridgefield, Washington

MAUL FOSTER ALONGI
p. 360 694 2691 | www.maulfoster.com

0 1,000 2,000
Feet

Project: 9003.01.20 Produced By: D. Coe/ W. Coffey Approved By: J. King Print Date: 2/20/2014 Path: X:\9003.01 Port of Ridgefield\400\Projects\06\Lake River Remedial Design\Fig1-1_Site Location.mxd

Source: Aerial photograph and shaded relief obtained from ESRI, Inc. ArcGIS Online.

Notes:
1. Wetlands Delineation obtained from the U.S. Fish and Wildlife Service, National Wetlands Inventory.
2. COE = Army Corps of Engineers.
3. Dredge project boundary is approximate and was digitized from COE project map number LK-1-26, January 20, 1970.

MAUL FOSTER ALONGI
p. 971 544 2139 | www.maulfoster.com

Legend

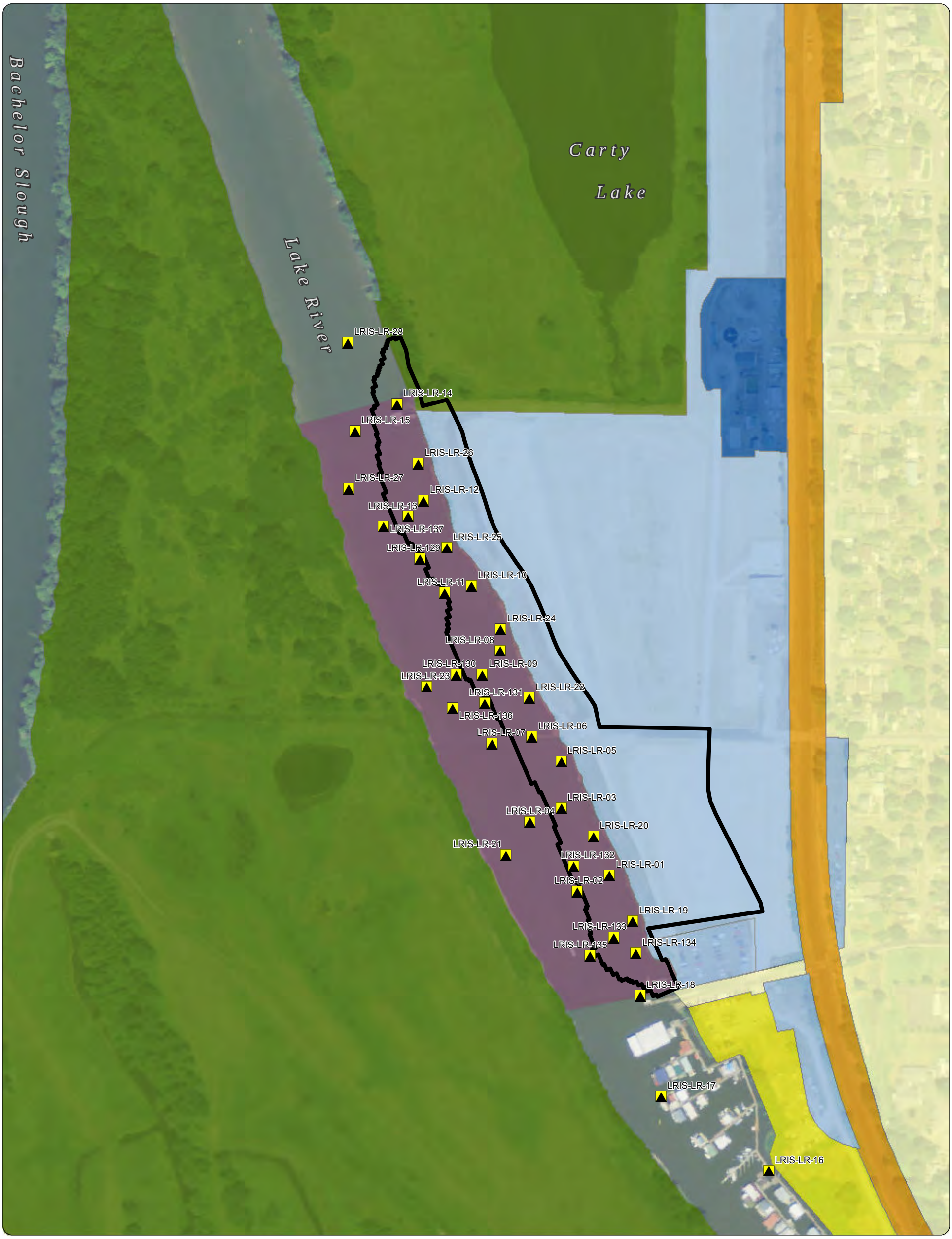
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- River
- Other
- COE Dredge Project (1970)
- POR Cell Boundaries

0 0.5 1
Miles

Figure 1-2
Lake River Setting

Lake River Construction Completion Report
Port of Ridgefield
Ridgefield, Washington

Project: 9003.01.40
Produced By: J. Schane
Approved By: M. Novak
Print Date: 12/18/2012



Source: Aerial photograph (2013) obtained from the National Agriculture Imagery Program (NAIP).

Notes:
1. BNSF = Burlington Northern Sante Fe.
2. Port = Port of Ridgefield.
3. RNWR = Ridgefield National Wildlife Refuge.
4. WWTP = Wastewater treatment plant.

Legend

- Sediment Sample Location
- Clark County Tax Lots (2010)
- Limits of Work

Area Designations

Port-Owned
- Port-Owned
- City of Ridgefield WWTP

Private
- Residential; Low-Density
- McCuddy's Marina Property

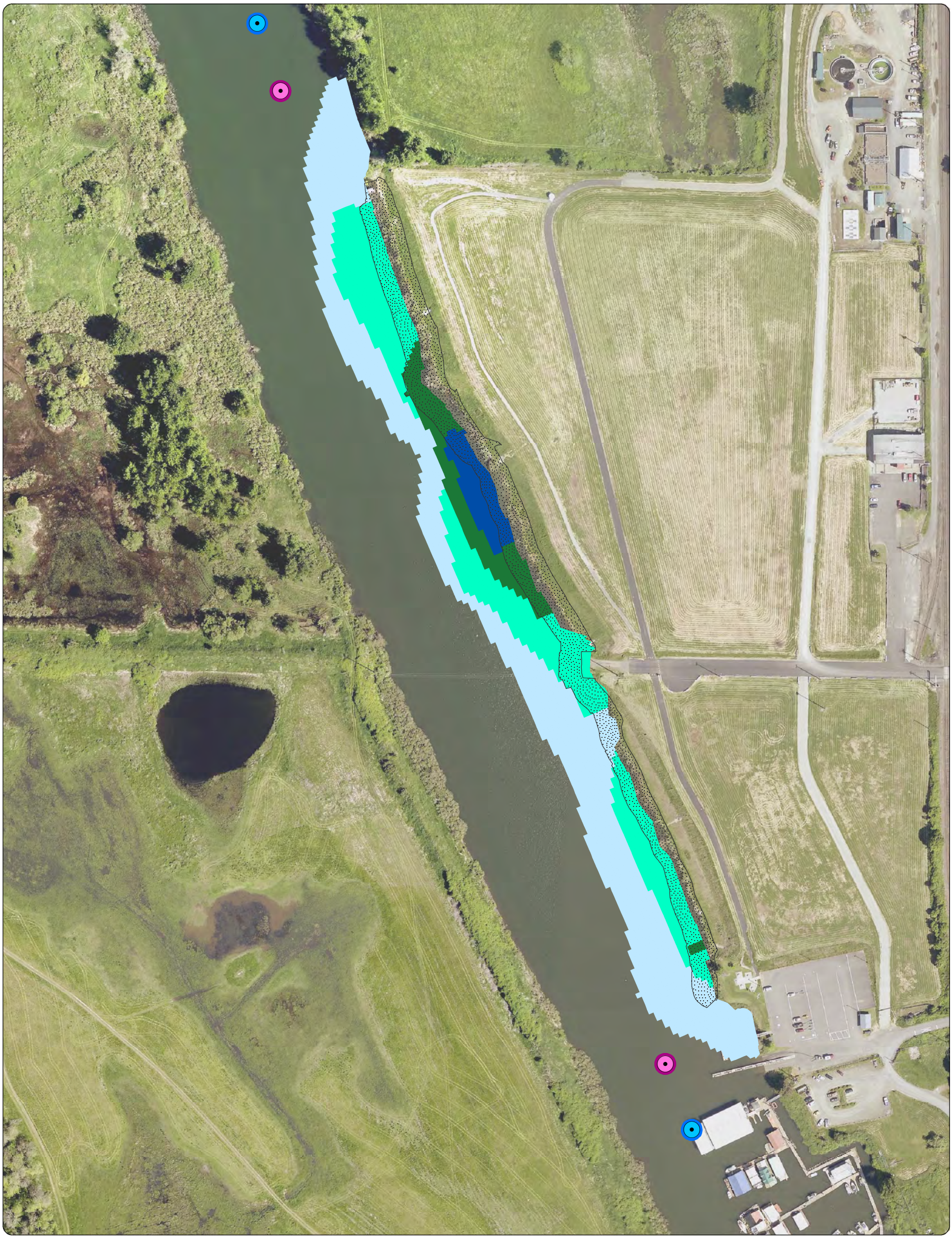
Other
- RNWR
- BNSF Railroad Property
- Lake River

0 150 300
Feet

Figure 1-3
Site and Property Diagram
Lake River Construction Completion Report
Port of Ridgefield
Ridgefield, Washington

MAUL FOSTER ALONGI
p. 971 544 2139 | www.maulfoster.com

Project: 9003.01.49
Produced By: J. Schane
Approved By: M. Novak
Print Date: 2/21/2014



Source: Aerial photograph (2014) obtained from Clark County GIS.

Notes:
1. PWT = Pacific Wood Treating Co.
2. ENR = Enhanced Natural Recovery.
3. Dredge depths denote neatline.
4. Dredged areas will also receive 1 foot of ENR treatment.
5. Analysis extent has been clipped to the bank-sediment interface. Dredge boundaries near the shore were generally determined by projection of a 3:1 horizontal to vertical slope down from the shoreline inflection point to the required dredge depth. ENR boundaries near the shore were determined by the point where the shore slope transitions to less than a 5:1 horizontal to vertical slope.

Legend

Fish Mix

Compliance Water Quality Monitoring Point (Mid-Depth and Near Bottom)

Early Warning Water Quality Monitoring Point (Mid-Depth and Near Bottom)

Remedial Action Areas

ENR Only | 1-ft Dredge | 2-ft Dredge | 3-ft Dredge

0 100 200
Feet

Figure 1-4
Lake River Remedy Areas

Former PWT Site
Ridgefield, Washington

MAUL FOSTER ALONGI
p. 971 544 2139 | www.maulfoster.com

Path: X:\9003.01 Port of Ridgefield\40\Projects\06\Lake River SAP\Fig1-1_Lake River Remedy Area.mxd
Print Date: 12/13/2017
Approved By: mnovak
Produced By: rroberts
Project: 9003.01.40/06

Figure 2-1
Project Schedule Outline
Lake River Construction Completion Report
Port of Ridgefield
Ridgefield, Washington

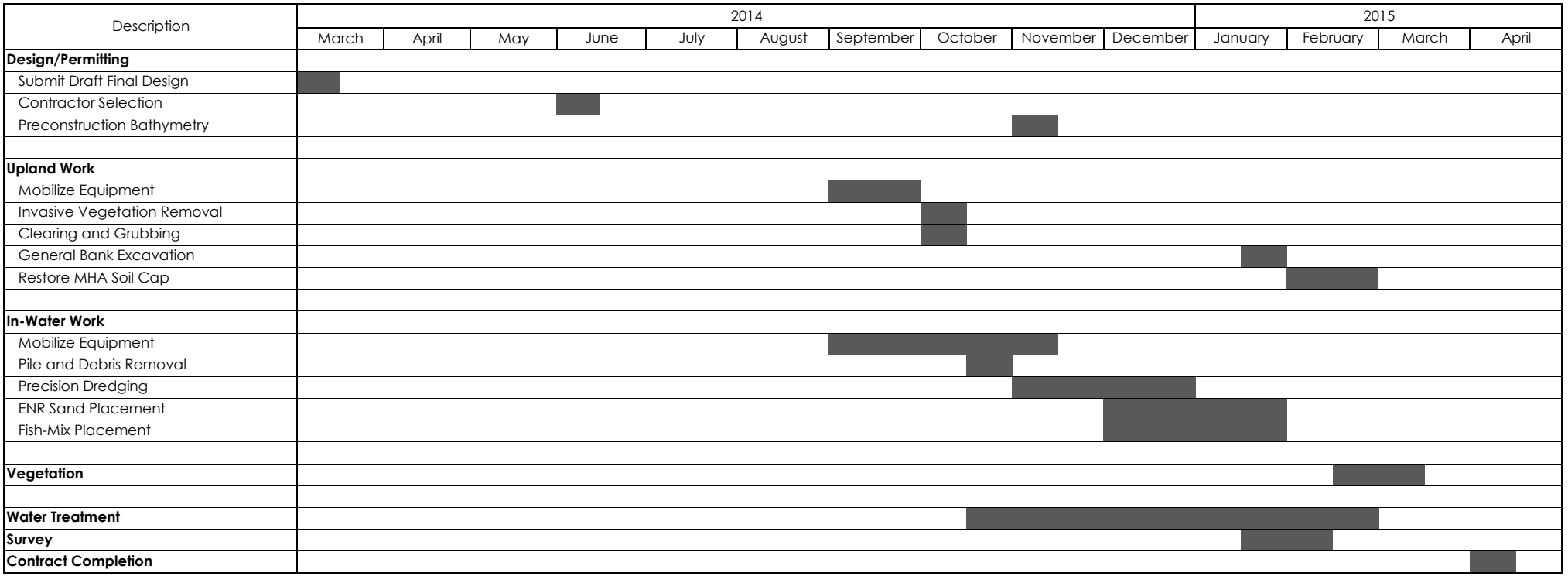


Figure 3-1
Mid-Depth NTU
Lake River Construction Completion Report
Port of Ridgefield
Ridgefield, Washington

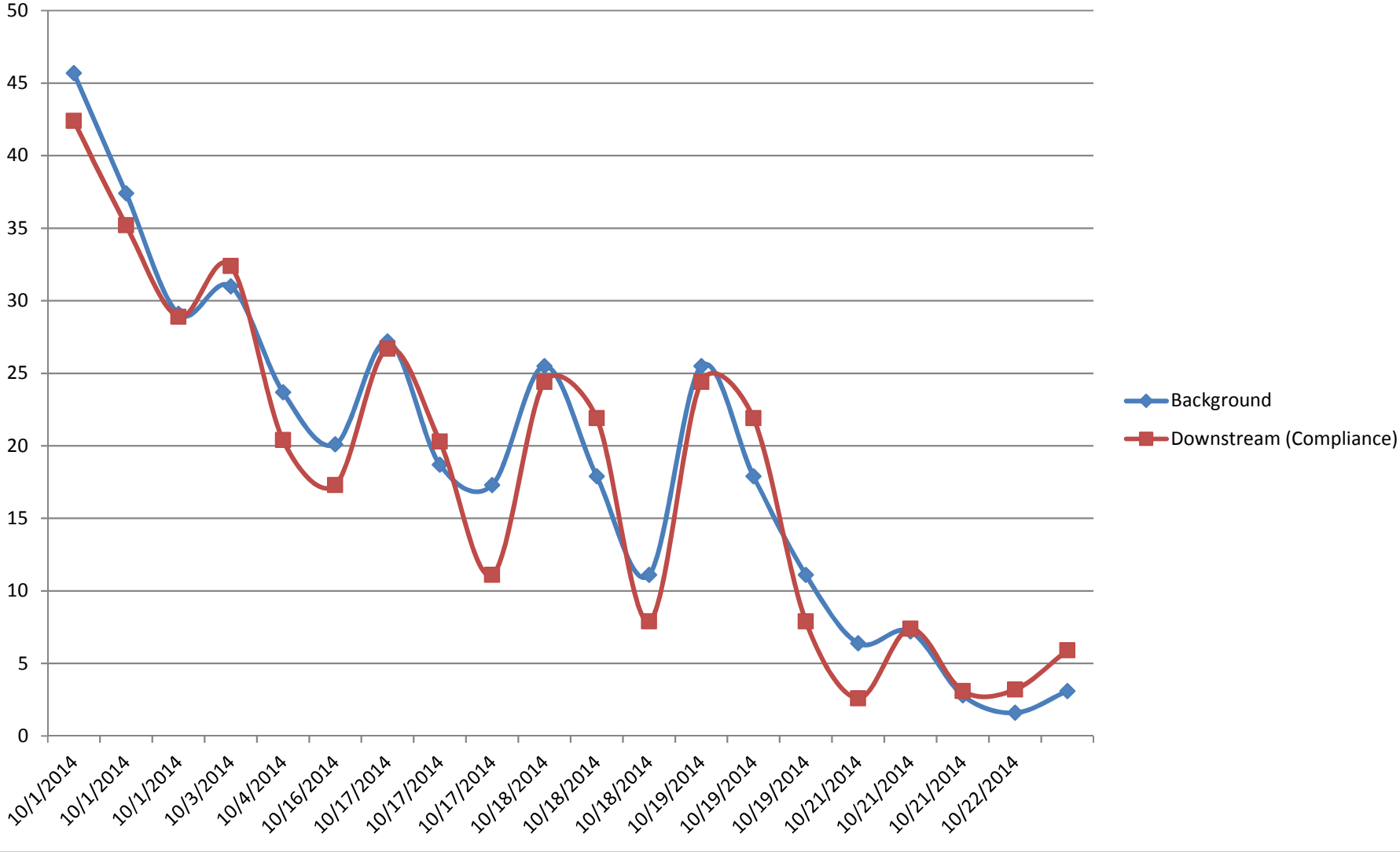
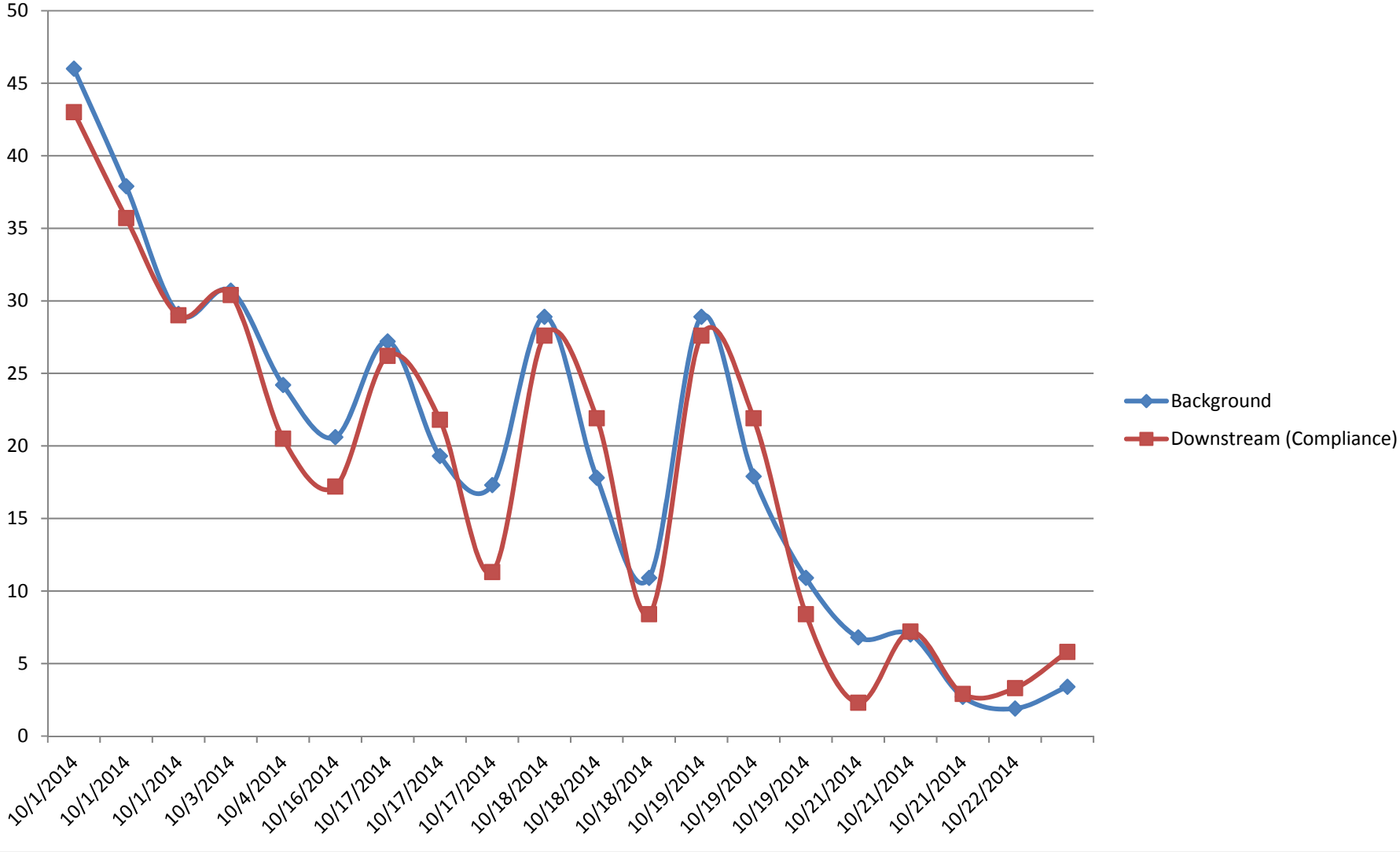
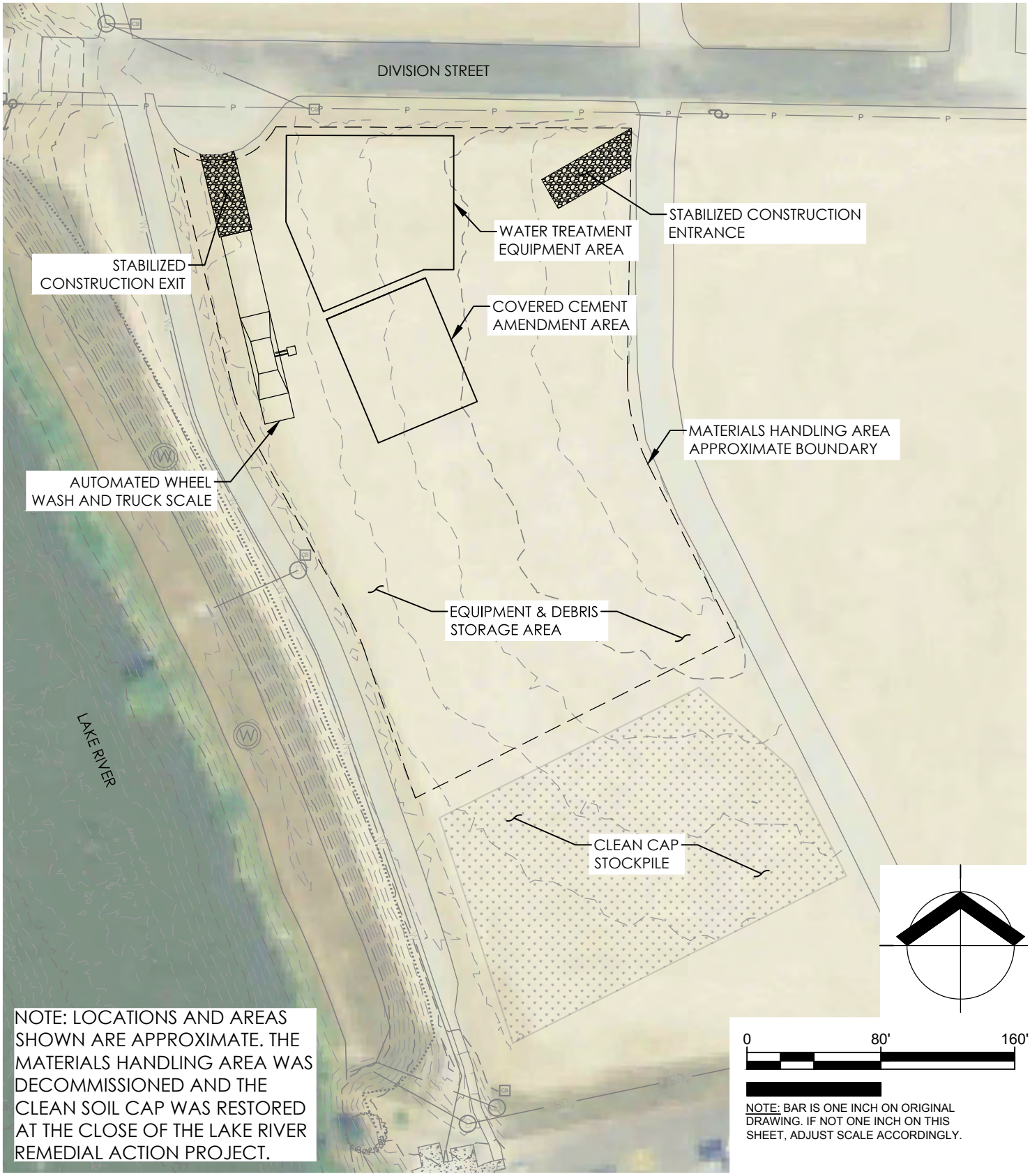


Figure 3-2
Near-Bottom NTU
Lake River Construction Completion Report
Port of Ridgefield
Ridgefield, Washington





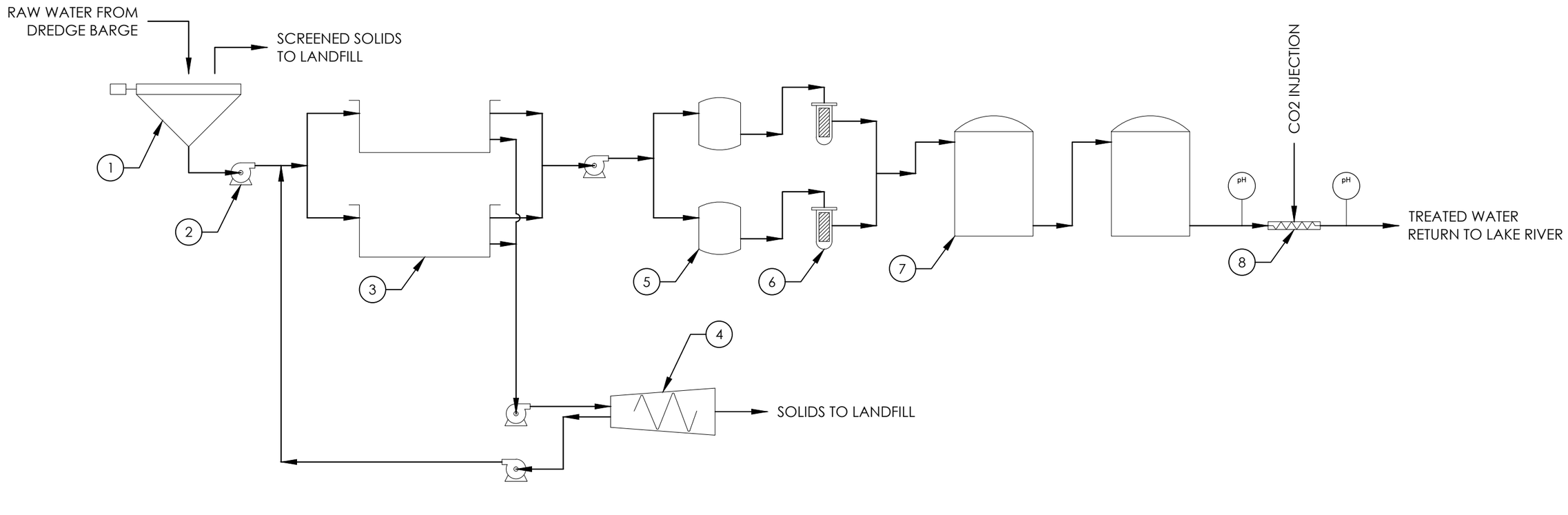
Filepath: G:\00_MFA Civil 3D\00_PROJECTS\9003.01.40 - Port of Ridgefield\Lake River Construction\EXHIBIT\MHA Layout.dwg
Date: 12/12/2017 5:16:20 PM Printed by: Josh Elliott

MFA JOB #:	9003.01.40
ISSUE DATE:	##/##/####
CHECKED:	P. WIESCHER
DRAWN:	J. ELLIOTT

MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
PHONE: 360.694.2691
www.maulfoster.com

MATERIALS HANDLING AREA LAYOUT
LAKE RIVER REMEDIAL ACTION
PORT OF RIDGEFIELD
RIDGEFIELD, WASHINGTON

FIGURE 4-1



GENERAL NOTES:

1. THIS PROCESS FLOW DIAGRAM IS INTENDED TO GENERALLY DEPICT THE WATER TREATMENT UNIT PROCESSES USED.
2. VALVING AND ADDITIONAL TREATMENT UNIT REDUNDANCY NOT SHOWN.

SHEET KEYNOTES:

1. VIBRATORY SCREEN
2. PUMP (TYP)
3. SEDIMENTATION BASIN (TYP)
4. CENTRIFUGE
5. RAPID SAND FILTER (TYP)
6. CARTRIDGE FILTER (TYP)
7. ACTIVATED CARBON VESSEL (TYP)
8. STATIC MIXER

MAUL FOSTER ALONGI
971.544.2139 (phone) | www.maulfoster.com

DRAWING NOT TO SCALE

Figure 4-2
Water Treatment Process Flow Diagram
Lake River Remedial Action Completion Report
Ridgefield, Washington

Filepath:G:\00_MFA Civil 3D\00_PROJECTS\9003.01.40 - Port of Ridgefield\Lake River Construction\EXHIBIT\Water Treatment Process Flow Diagram.dwg
Printed by:Josh Elliott
Date:12/12/2017 3:29:52 PM

DRAWINGS

LAKE RIVER REMEDIAL ACTION RECORD DRAWINGS

PREPARED FOR:

PORT OF RIDGEFIELD

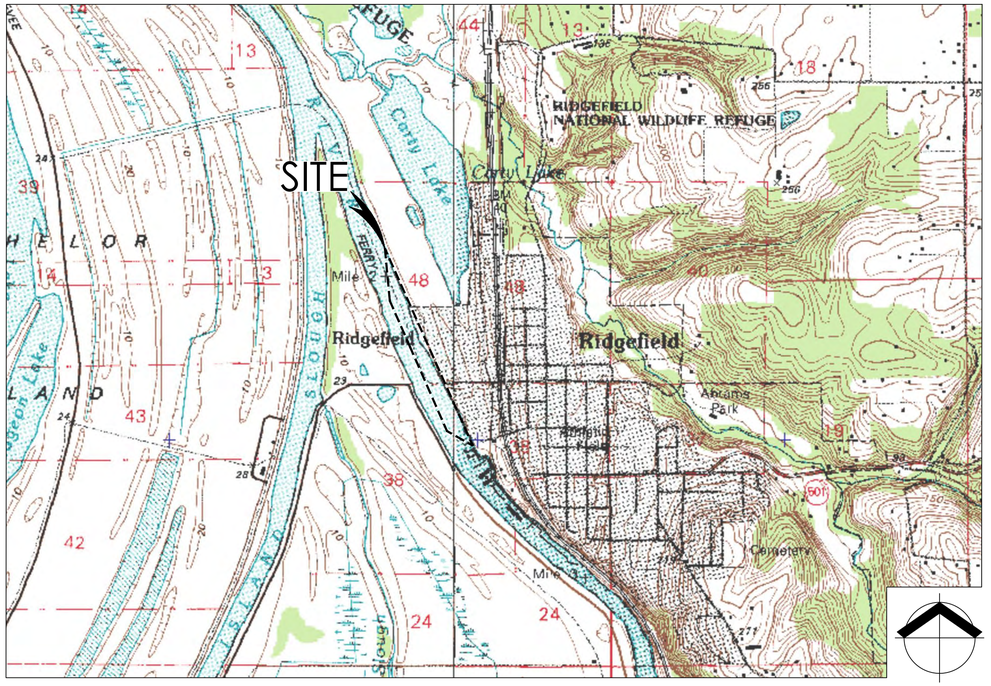
FORMER PACIFIC WOOD TREATING CO. SITE - RIDGEFIELD, WASHINGTON

PROJECT CONTACTS

CLIENT	ENGINEER
PORT OF RIDGEFIELD 111 WEST DIVISION ST RIDGEFIELD, WASHINGTON 98642 (360) 887-3873 (PHONE) CONTACT: LAURIE OLIN, DIRECTOR OF OPERATIONS	MAUL FOSTER & ALONGI, INC. 400 E. MILL PLAIN BLVD, SUITE 400 VANCOUVER, WASHINGTON 98660 (971) 544-2139 (PHONE) CONTACTS: CONNOR LAMB, P.E. JOSHUA ELLIOTT, P.E.
DEPARTMENT OF ECOLOGY	**DEPARTMENT OF ECOLOGY**
TOXICS CLEANUP PROGRAM VANCOUVER FIELD OFFICE 2108 GRAND BLVD VANCOUVER, WA 98664 (360) 690-4795 (PHONE) CONTACT: CRAIG RANKINE	TOXICS CLEANUP PROGRAM SOUTHWEST REGION OFFICE 300 DESMOND DR LACEY, WA 98503-1274 (360) 407-6260 (PHONE) CONTACT: JOYCE MERCURI

GENERAL NOTES

1. HORIZONTAL DATUM: WASHINGTON STATE PLANE COORDINATE SYSTEM SOUTH ZONE, NAD 83/91.
2. ELEVATION DATUM: CLARK COUNTY, NGVD 29/47
3. THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, BASED UPON INFORMATION FURNISHED BY OTHERS. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THIS RECORD DRAWING OR FOR ANY ERRORS OR OMISSIONS THAT MAY HAVE BEEN INCORPORATED INTO IT AS A RESULT OF INCORRECT INFORMATION PROVIDED TO THE ENGINEER. THOSE RELYING ON THIS RECORD DOCUMENT ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF ITS ACCURACY.
4. BATHYMETRIC AND TOPOGRAPHIC SURVEY PROVIDED BY DIXON MARINE SERVICES, INC. AND eTRAC, INC.



VICINITY MAP

NOT TO SCALE

SHEET INDEX

MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
PHONE: 360.694.2691
www.maulfoster.com

Port of Ridgefield

LAKE RIVER RECORD DRAWINGS
PORT OF RIDGEFIELD
RIDGEFIELD, WASHINGTON

ISSUE	DATE	DESCRIPTION
---	---	---

PROJECT: 9003.01.40
DESIGNED: J. ELLIOTT
DRAWN: J. ELLIOTT
CHECKED: ----
SCALE

SCALE AS NOTED

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

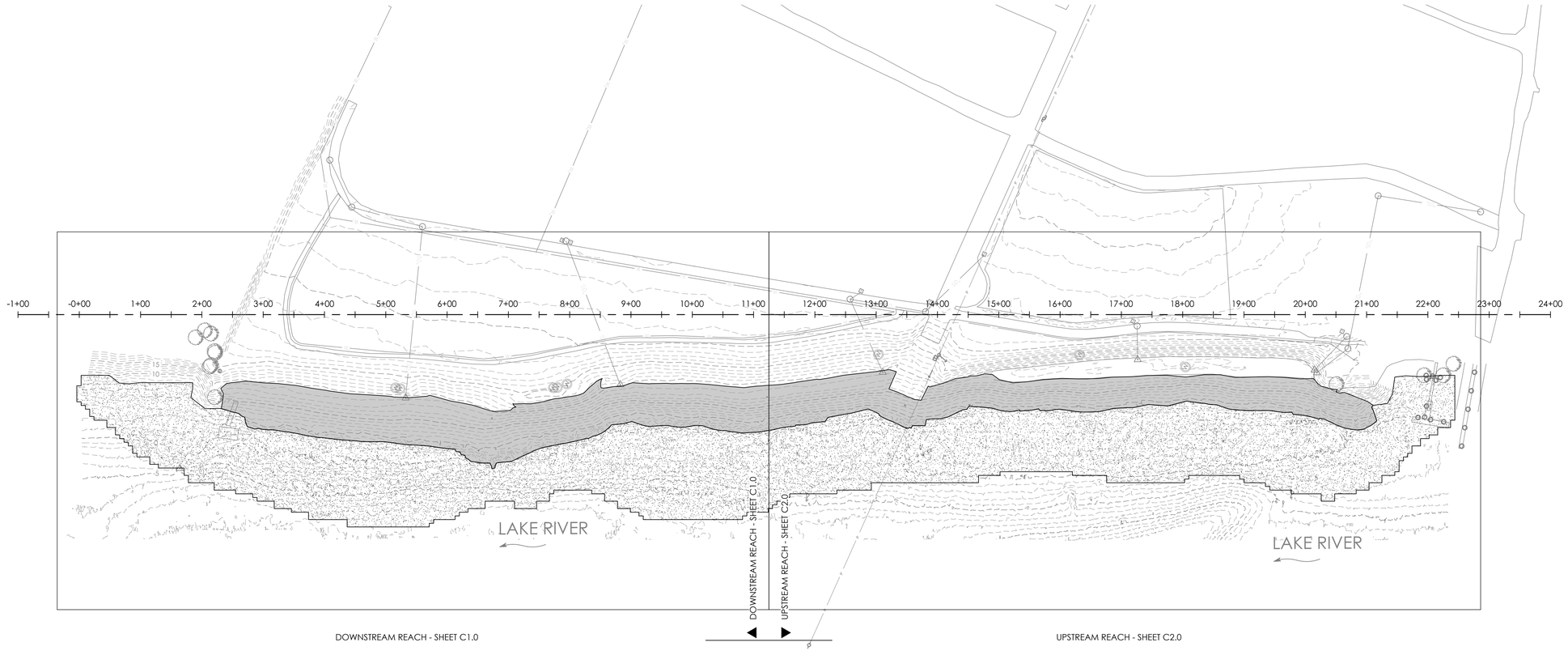
SHEET TITLE

COVER

SHEET

--

PLOTTED BY: Josh Elliott FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\9003.01.40 - Port of Ridgefield\Lake River Construction\PLANS\CX.X - Cover.dwg
PLOTTED ON: 2017-12-13 9:29 AM



OVERALL SITE MAP LEGEND:

- 2015 RECORD SURVEY MAJOR CONTOUR (5' INTERVAL)
- 2015 RECORD SURVEY MINOR CONTOUR (1' INTERVAL)
- EXTG IRRIGATION PIPE (UNDERGROUND)
- EXTG STORMWATER PIPE
- EXTG MONITORING WELL
- EXTG STORMWATER CATCH BASIN
- EXTG STORMWATER MANHOLE
- EXTG STORMWATER OUTFALL
- ENR SAND DESIGN EXTENTS
- FISH MIX DESIGN EXTENTS

MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
PHONE: 360.694.2691
www.maulfoster.com

Port of Ridgefield

LAKE RIVER RECORD DRAWINGS

PORT OF RIDGEFIELD

RIDGEFIELD, WASHINGTON

ISSUE	DATE	DESCRIPTION

PROJECT: 9003.01.40
DESIGNED: J. ELLIOTT
DRAWN: J. ELLIOTT
CHECKED: ----

SCALE

0 100' 200

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

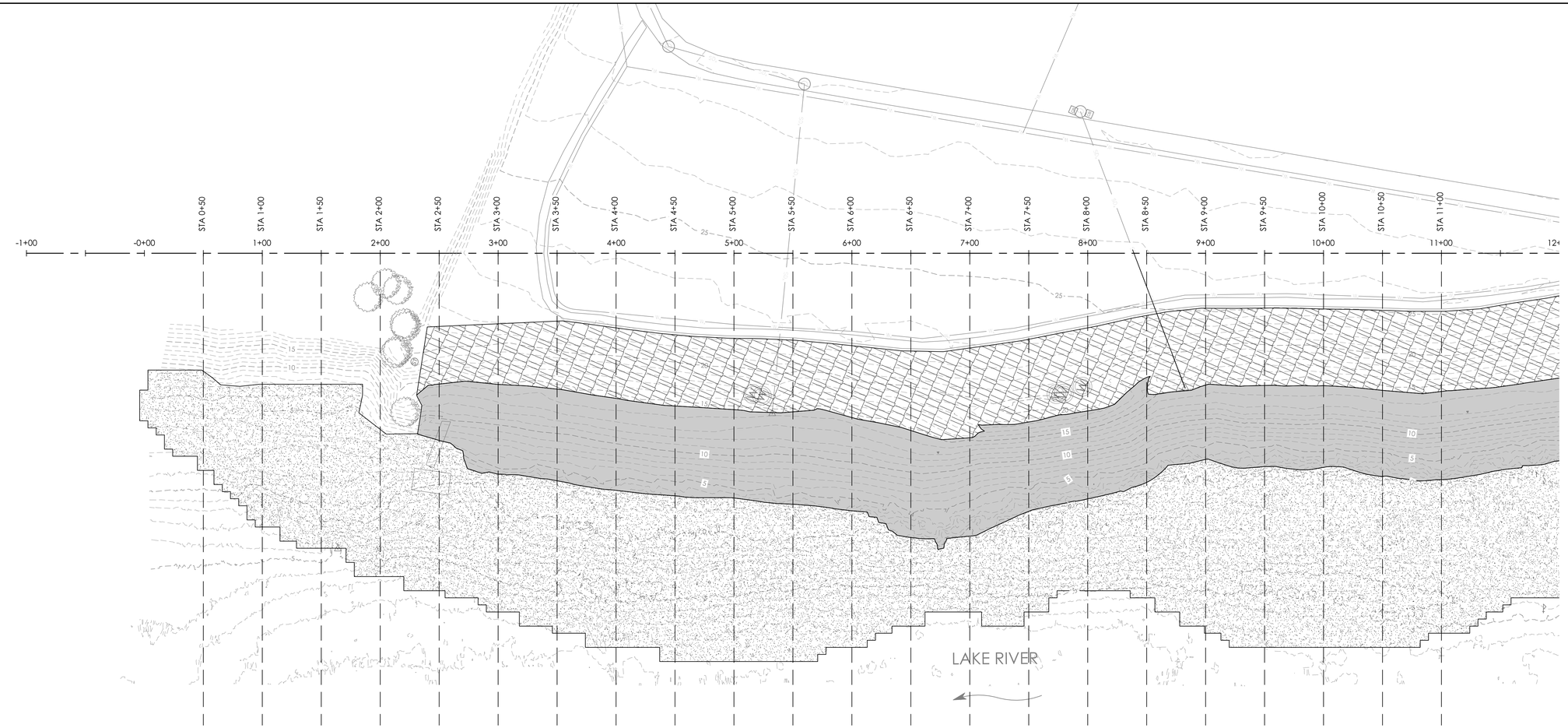
SHEET TITLE

OVERALL SITE MAP

SHEET

C0.0

PLOTTED ON: 2017-12-13 9:39 AM PLOTTED BY: Josh Elliott FILENAME: G:\00_MFA Civil\30\00_PROJECTS\9003.01.40 - Port of Ridgefield\Lake River Construction\PLANS\C0.0 - OVERALL PLAN.dwg



DOWNSTREAM REACH STATIONING LEGEND:

- 2015 RECORD SURVEY MAJOR CONTOUR (5' INTERVAL)
- 2015 RECORD SURVEY MINOR CONTOUR (1' INTERVAL)
- EXTG IRRIGATION PIPE (UNDERGROUND)
- EXTG STORMWATER PIPE
- EXTG MONITORING WELL
- EXTG STORMWATER CATCH BASIN
- EXTG STORMWATER MANHOLE
- EXTG STORMWATER OUTFALL
- ENR SAND DESIGN EXTENTS
- FISH MIX DESIGN EXTENTS
- TRM DESIGN EXTENTS

MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
PHONE: 360.694.2691
www.maulfoster.com

Port of Ridgefield

LAKE RIVER RECORD DRAWINGS
PORT OF RIDGEFIELD
RIDGEFIELD, WASHINGTON

ISSUE	DATE	DESCRIPTION
	---	---
	---	---

PROJECT: 9003.01.40
DESIGNED: J. ELLIOTT
DRAWN: J. ELLIOTT
CHECKED: ---

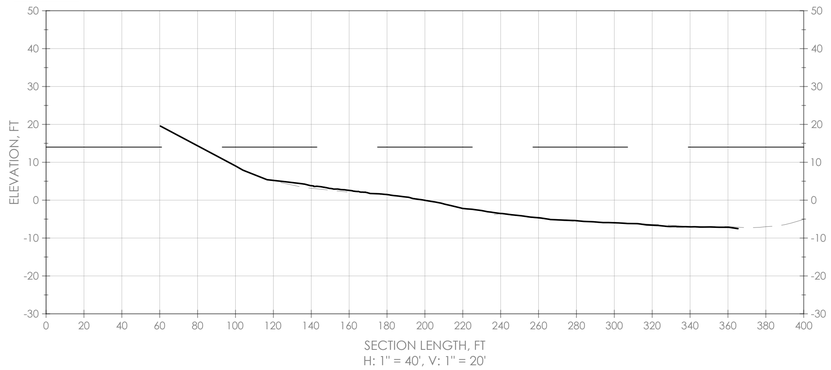
SCALE
0 50' 100'
NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE
DOWNSTREAM REACH ENLARGED PLAN

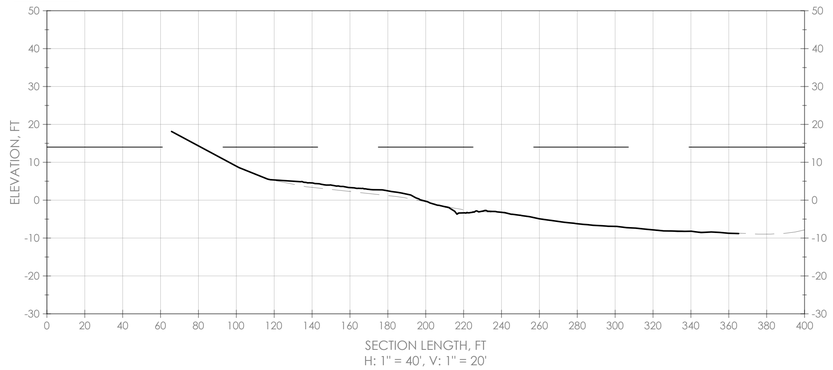
SHEET
C1.0

PLOTTED ON: 2017-12-13 9:59 AM PLOTTED BY: Josh Elliott FILENAME: G:\00_MFA Civil\53\00_PROJECTS\9003.01.40 - Port of Ridgefield\Lake River Construction\PLANS\SECTIONS-CELL 2.dwg

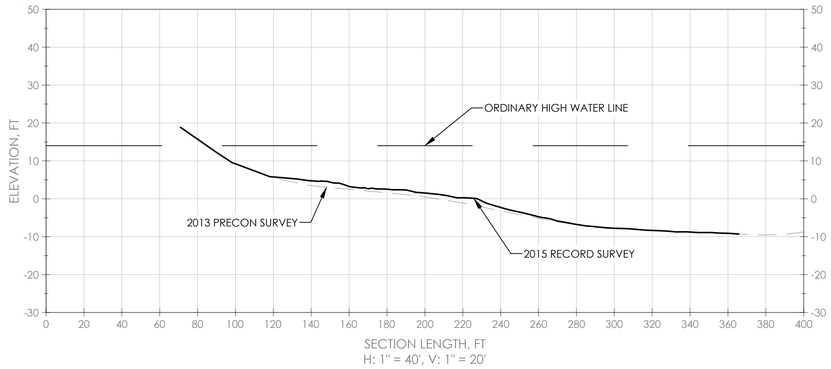
STA: 0+50



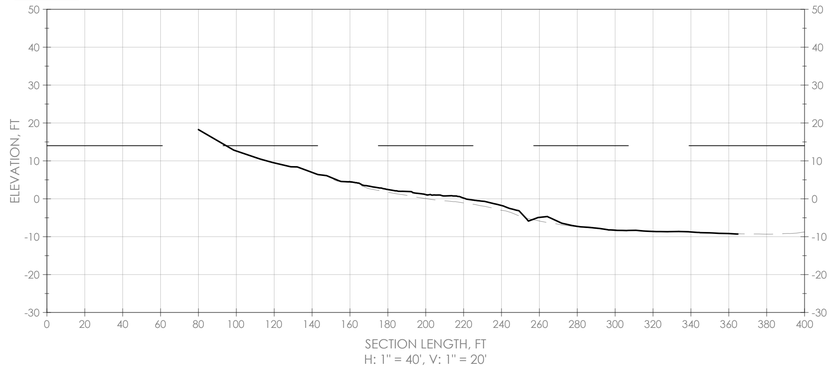
STA: 1+00



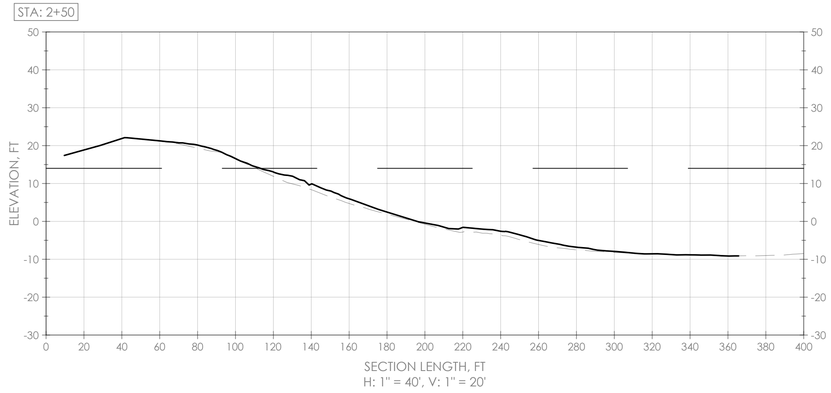
STA: 1+50



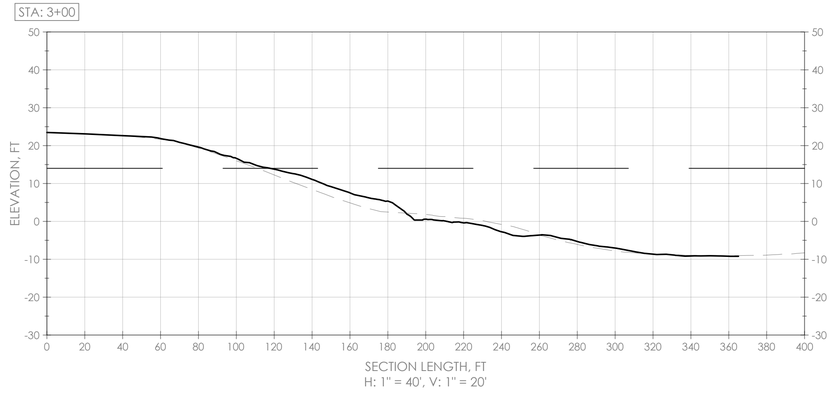
STA: 2+00



STA: 2+50



STA: 3+00



MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
PHONE: 360.694.2691
www.maulfoster.com

Port of Ridgefield

LAKE RIVER RECORD DRAWINGS

PORT OF RIDGEFIELD

RIDGEFIELD, WASHINGTON

ISSUE	DATE	DESCRIPTION
---	---	---
---	---	---

PROJECT: 9003.01.40

DESIGNED: J. ELLIOTT

DRAWN: J. ELLIOTT

CHECKED: ---

SCALE

SCALE AS NOTED

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE

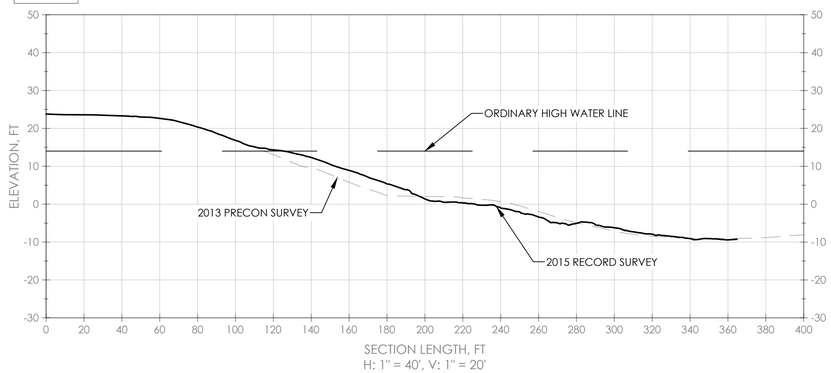
DOWNSTREAM SECTIONS (STA 0+50 TO STA 3+00)

SHEET

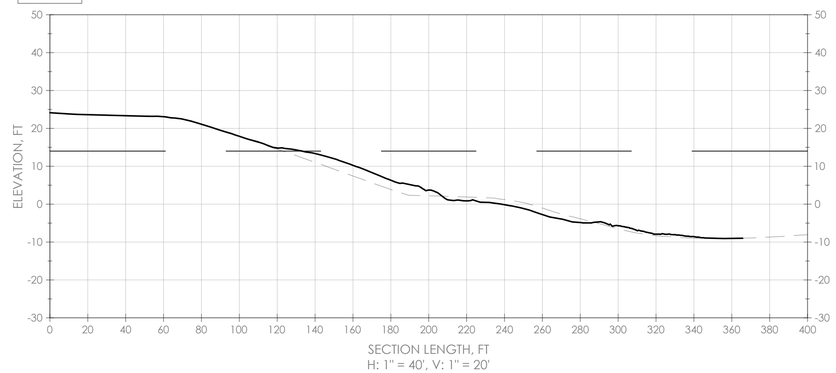
C1.1

PLOTTED ON: 2017-12-13 10:00 AM PLOTTED BY: Josh Elliott FILENAME: G:\00_MFA Cost 3D\05_PROJECTS\9003.01.40 - Port of Ridgefield\Lake River Construction\PLANS\SECTIONS-CELL 2.dwg

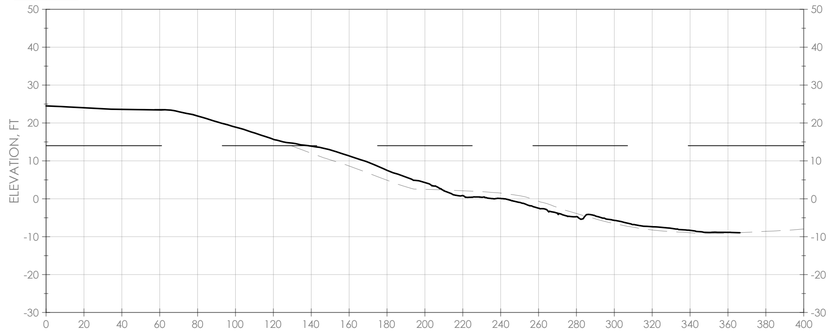
STA: 3+50



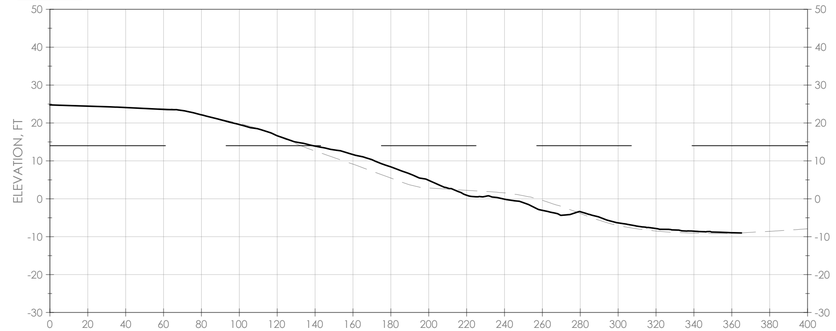
STA: 4+00



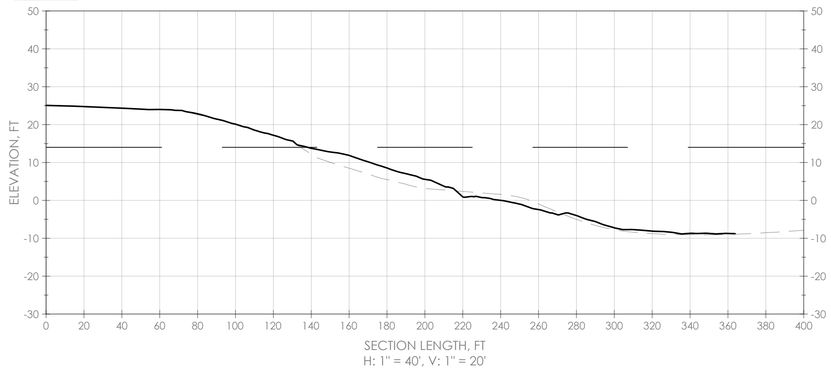
STA: 4+50



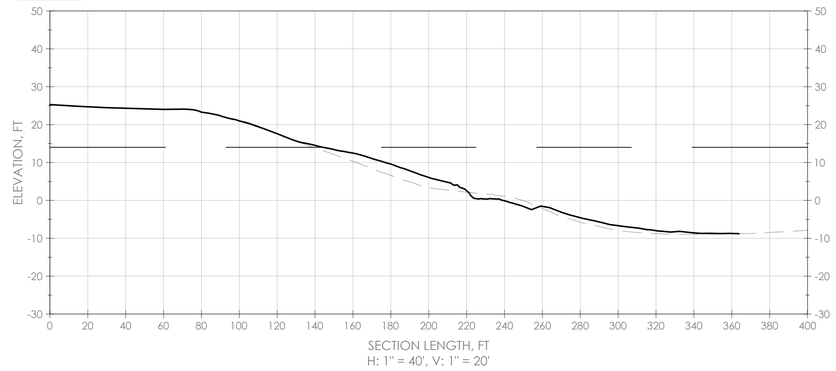
STA: 5+00



STA: 5+50



STA: 6+00



MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
PHONE: 360.694.2691
www.maulfoster.com

Port of Ridgefield

LAKE RIVER RECORD DRAWINGS

PORT OF RIDGEFIELD

RIDGEFIELD, WASHINGTON

	DESCRIPTION	DATE	ISSUE
	-	-	-

PROJECT: 9003.01.40

DESIGNED: J. ELLIOTT

DRAWN: J. ELLIOTT

CHECKED: ----

SCALE

SCALE AS NOTED

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE

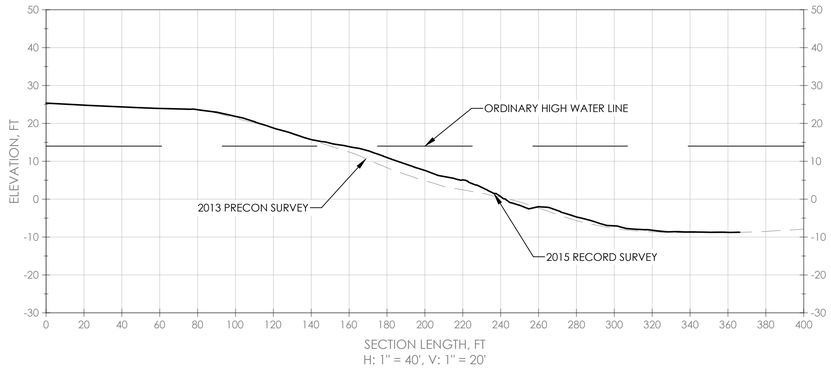
DOWNSTREAM SECTIONS (STA 3+50 TO STA 6+00)

SHEET

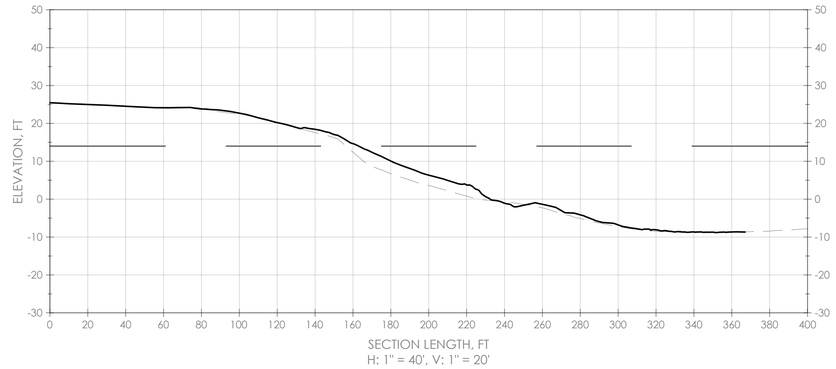
C1.2

PLOTTED ON: 2017-12-13 10:00 AM PLOTTED BY: Josh Elliott FILENAME: G:\00_MFA Civil\3D\00_PROJECTS\9003.01 -40- Port of Ridgefield\Lake River Construction\PLANS\SECTIONS-CELL 2.dwg

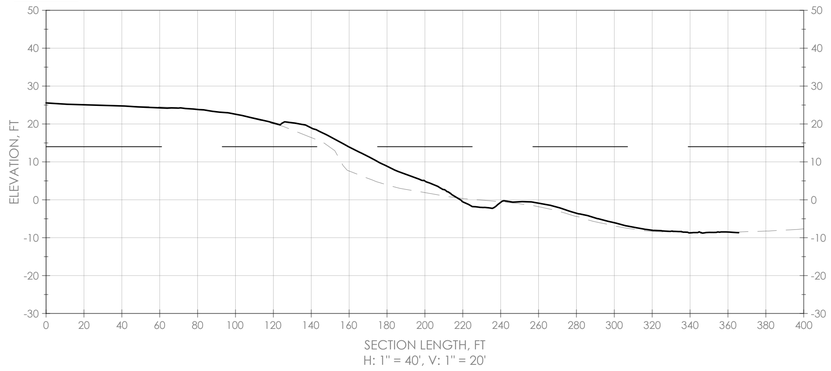
STA: 6+50



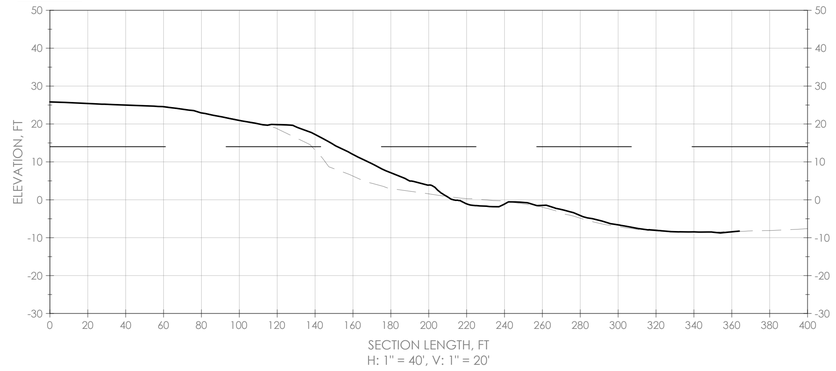
STA: 7+00



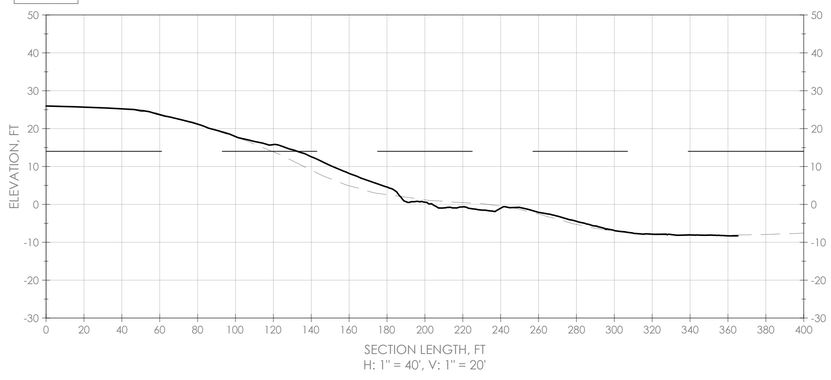
STA: 7+50



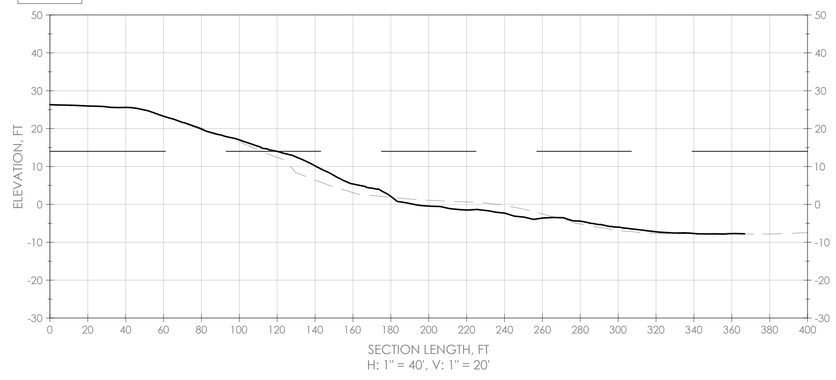
STA: 8+00



STA: 8+50



STA: 9+00



MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
PHONE: 360.694.2691
www.maulfoster.com

Port of Ridgefield

LAKE RIVER RECORD DRAWINGS
PORT OF RIDGEFIELD
RIDGEFIELD, WASHINGTON

ISSUE	DATE	DESCRIPTION

PROJECT: 9003.01.40
DESIGNED: J. ELLIOTT
DRAWN: J. ELLIOTT
CHECKED: ----
SCALE

SCALE AS NOTED

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE

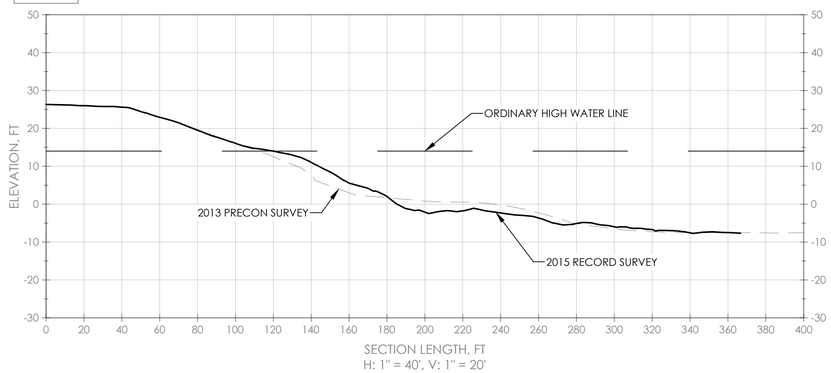
DOWNSTREAM SECTIONS (STA 6+50 TO STA 9+00)

SHEET

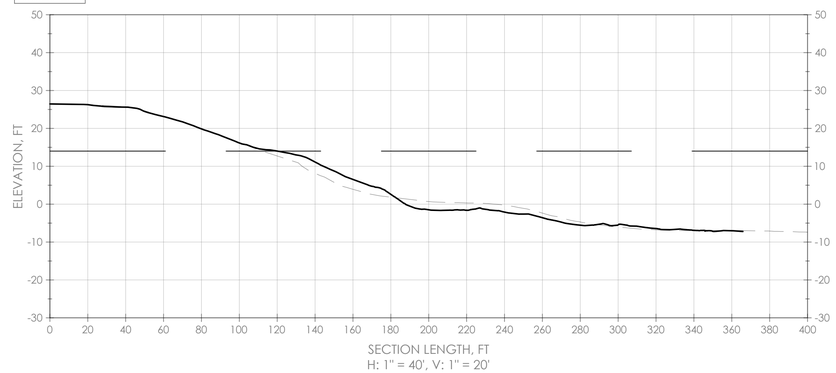
C1.3

PLOTTED ON: 2017-12-13 10:00 AM PLOTTED BY: Josh Elliott FILENAME: G:\00_MFA Civil\3D\00_PROJECTS\9003.01 40 - Port of Ridgefield\Lake River Construction\PLANS\SECTIONS\C2ELL 2.dwg

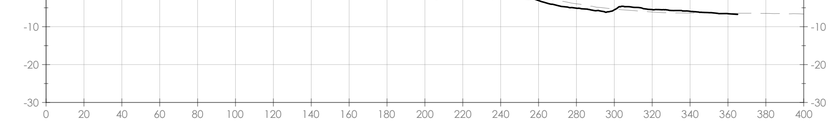
STA: 9+50



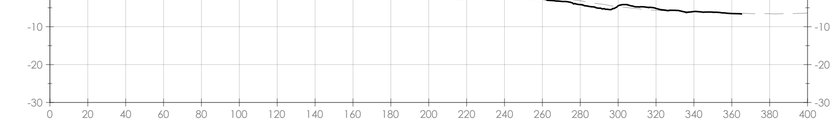
STA: 10+00



STA: 10+50



STA: 11+00



MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
PHONE: 360.694.2691
www.maulfoster.com

Port of Ridgefield

LAKE RIVER RECORD DRAWINGS

PORT OF RIDGEFIELD

RIDGEFIELD, WASHINGTON

ISSUE	DATE	DESCRIPTION
1	1	1

PROJECT: 9003.01.40

DESIGNED: J. ELLIOTT

DRAWN: J. ELLIOTT

CHECKED: ----

SCALE

SCALE AS NOTED

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

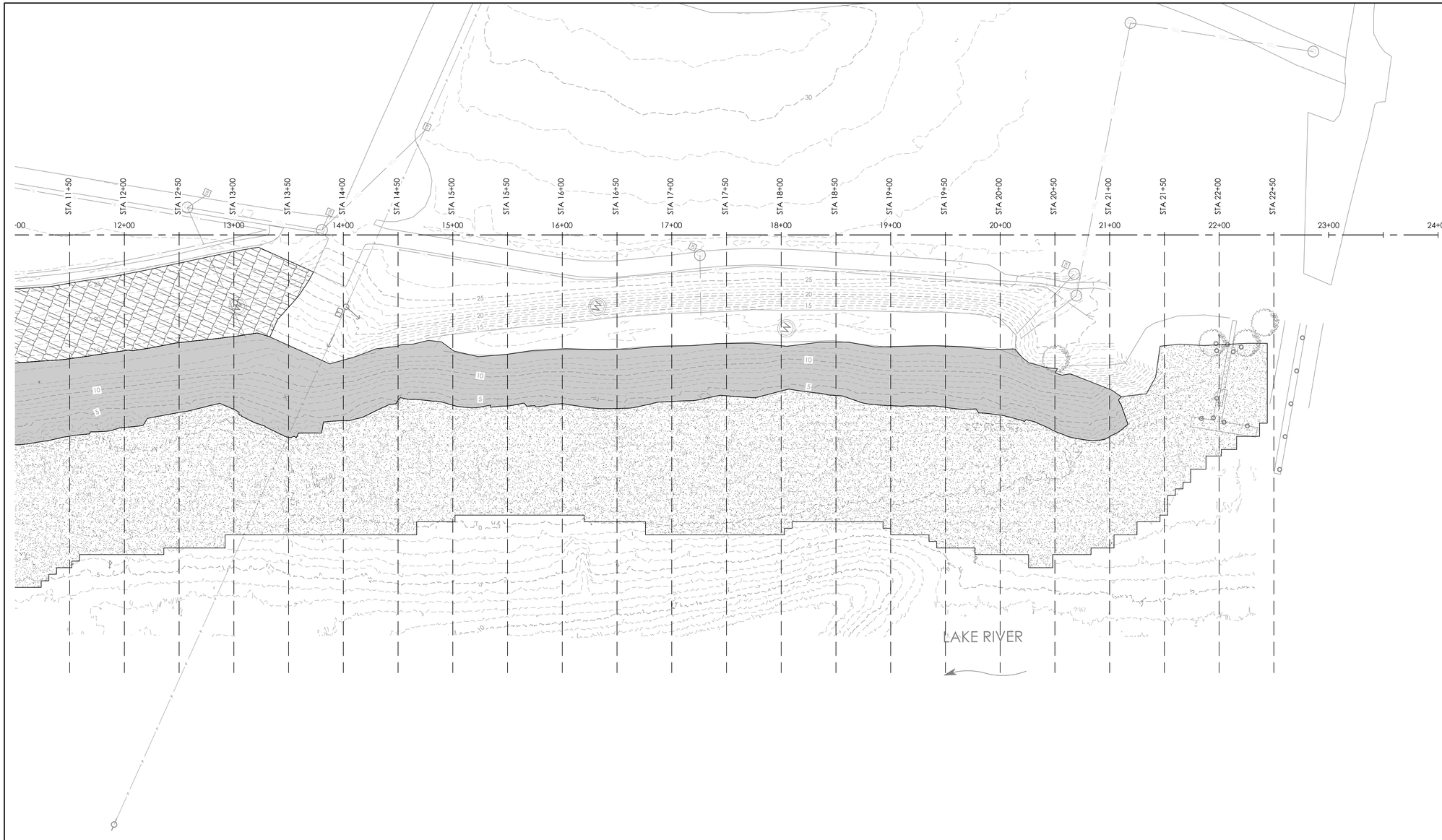
SHEET TITLE

DOWNSTREAM SECTIONS (STA 9+50 TO STA 11+00)

SHEET

C1.4

PLOTTED ON: 2017-12-13 10:00 AM PLOTTED BY: Josh Elliott FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\9003.01.40 - Port of Ridgefield\Lake River Construction\PLANS\SECTIONS.C3SLL 2.dwg



UPSTREAM REACH STATIONING LEGEND:

- 2015 RECORD SURVEY MAJOR CONTOUR (5' INTERVAL)
- 2015 RECORD SURVEY MINOR CONTOUR (1' INTERVAL)
- EXTG IRRIGATION PIPE (UNDERGROUND)
- SD_x EXTG STORMWATER PIPE
- EXTG MONITORING WELL
- EXTG STORMWATER CATCH BASIN
- EXTG STORMWATER MANHOLE
- EXTG STORMWATER OUTFALL
- ENR SAND DESIGN EXTENTS
- FISH MIX DESIGN EXTENTS
- TRM DESIGN EXTENTS

MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
PHONE: 360.694.2691
www.maulfoster.com

Port of Ridgefield

LAKE RIVER RECORD DRAWINGS
PORT OF RIDGEFIELD
RIDGEFIELD, WASHINGTON

ISSUE	DATE	DESCRIPTION

PROJECT: 9003.01.40
DESIGNED: J. ELLIOTT
DRAWN: J. ELLIOTT
CHECKED: ----

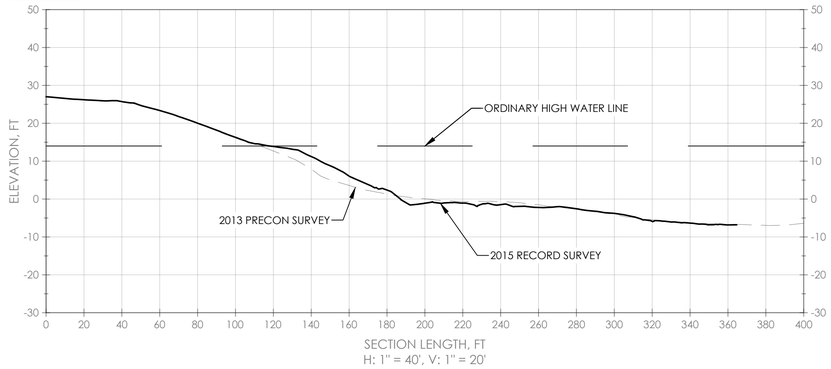
SCALE
0 50' 100
NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE
UPSTREAM REACH ENLARGED PLAN

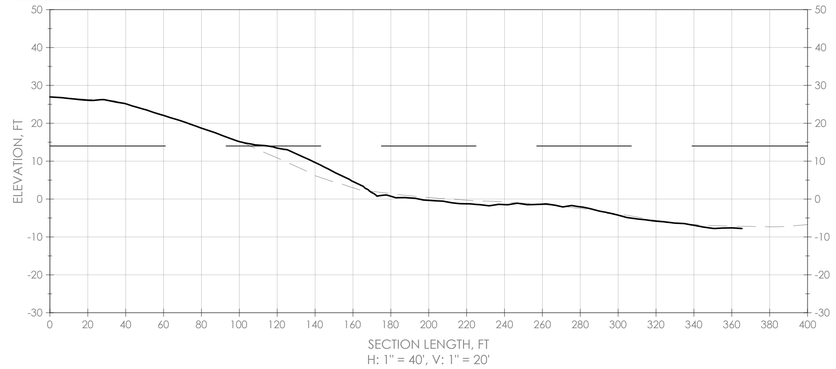
SHEET
C2.0

PLOTTED BY: John Elliott FILENAME: G:\00_MFA Civil\3D\00_PROJECTS\9003.01.40 - Port of Ridgefield\Lake River Construction\PLANS\SECTIONS A1 & CELL 3.dwg
PLOTTED ON: 2017-12-13 10:00 AM

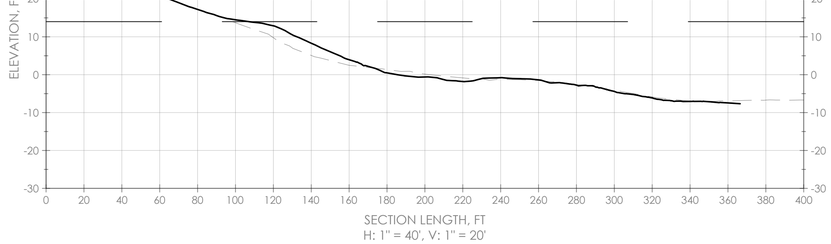
STA: 11+50



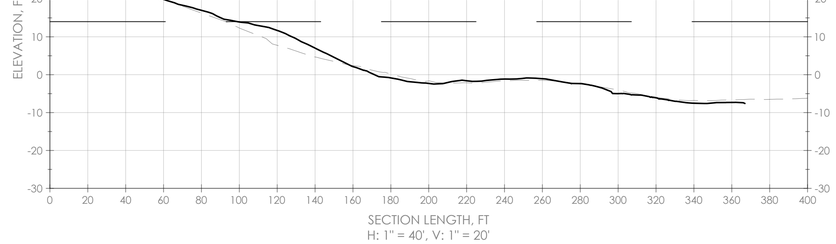
STA: 12+00



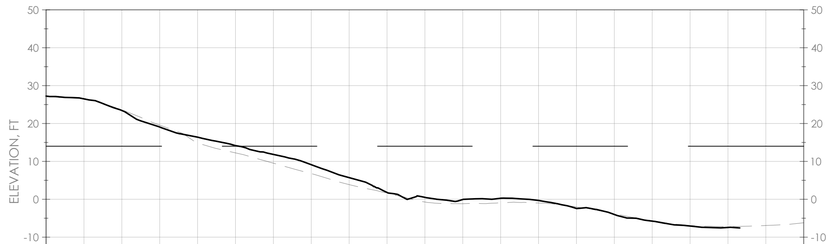
STA: 12+50



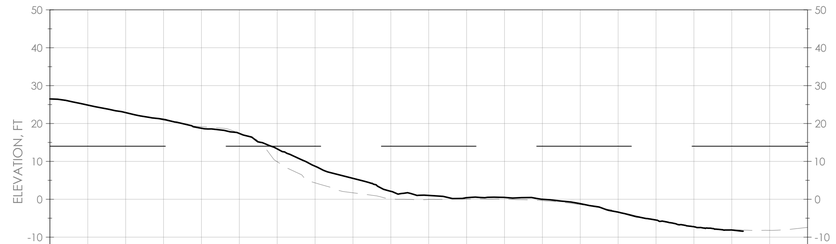
STA: 13+00



STA: 13+50



STA: 14+00



MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
PHONE: 360.694.2691
www.maulfoster.com

Port of Ridgefield

LAKE RIVER RECORD DRAWINGS
PORT OF RIDGEFIELD
RIDGEFIELD, WASHINGTON

ISSUE	DATE	DESCRIPTION
	---	---
	---	---
	---	---

PROJECT: 9003.01.40
DESIGNED: J. ELLIOTT
DRAWN: J. ELLIOTT
CHECKED: ---
SCALE

SCALE AS NOTED

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE

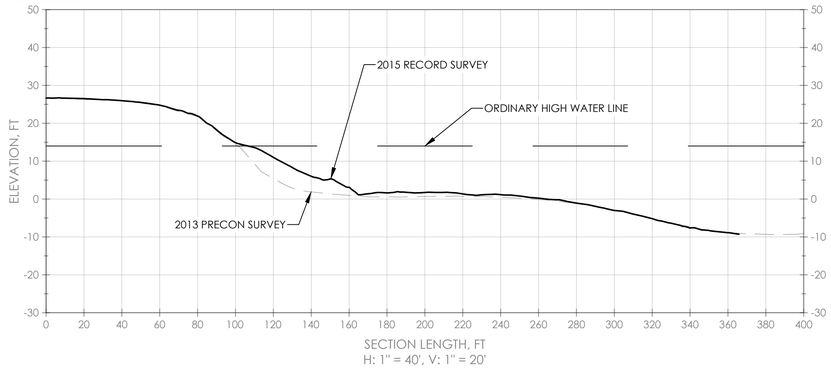
UPSTREAM SECTIONS (STA 11+50 TO STA 14+00)

SHEET

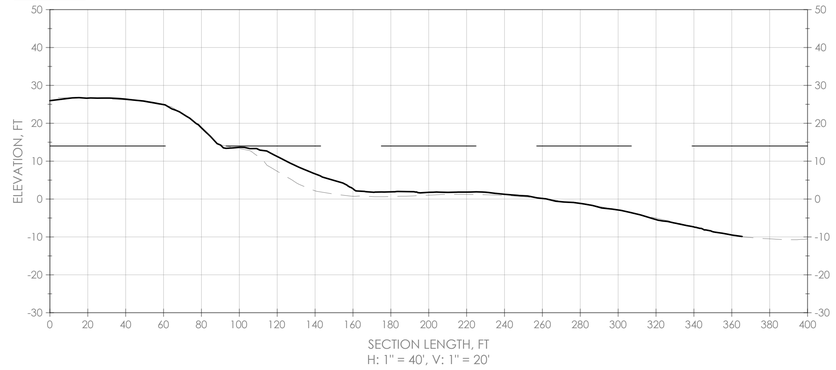
C2.1

PLOTTED ON: 2017-12-13 10:00 AM PLOTTED BY: Josh Elliott FILENAME: G:\00_MFA Civil\30\00_PROJECTS\9003.01.40 - Port of Ridgefield\Lake River Construction\PLANS\SECTIONS-ALL & CELL 3.dwg

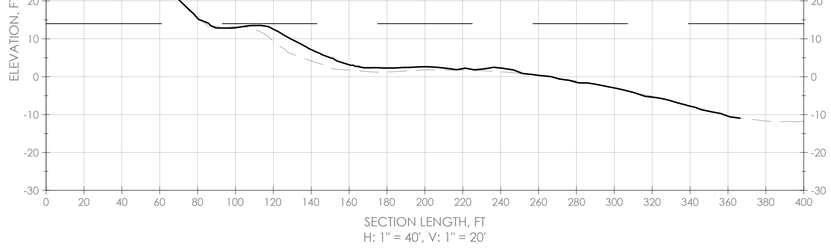
STA: 14+50



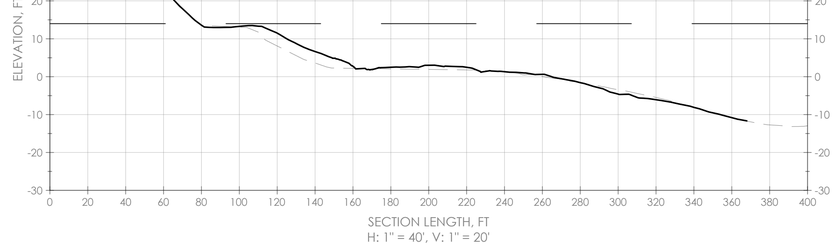
STA: 15+00



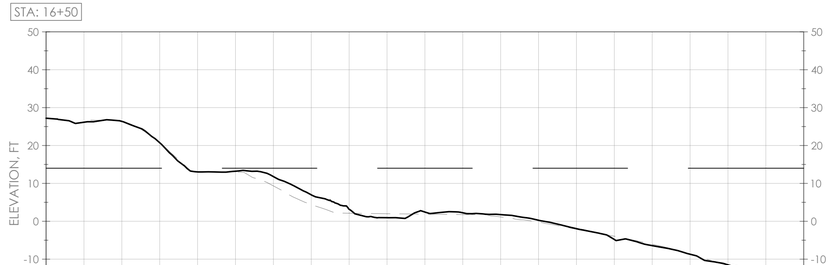
STA: 15+50



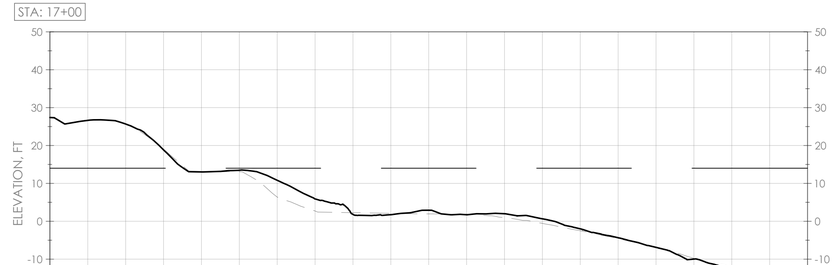
STA: 16+00



STA: 16+50



STA: 17+00



MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
PHONE: 360.694.2691
www.maulfoster.com

Port of Ridgefield

LAKE RIVER RECORD DRAWINGS
PORT OF RIDGEFIELD
RIDGEFIELD, WASHINGTON

ISSUE	DATE	DESCRIPTION
	---	---
	---	---
	---	---

PROJECT: 9003.01.40
DESIGNED: J. ELLIOTT
DRAWN: J. ELLIOTT
CHECKED: ---
SCALE

SCALE AS NOTED

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE

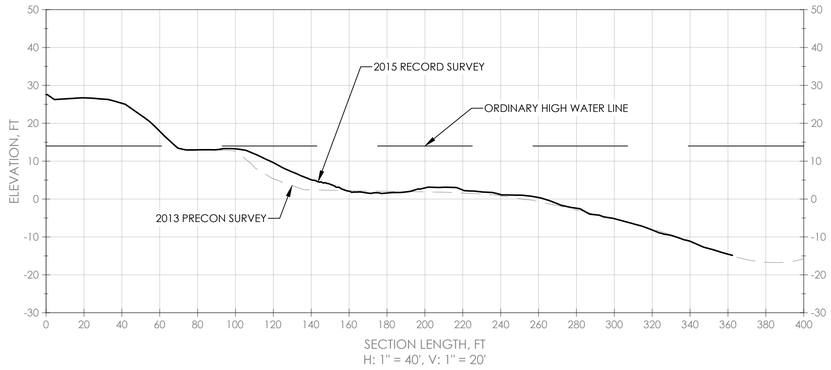
UPSTREAM SECTIONS (STA 14+50 TO STA 17+00)

SHEET

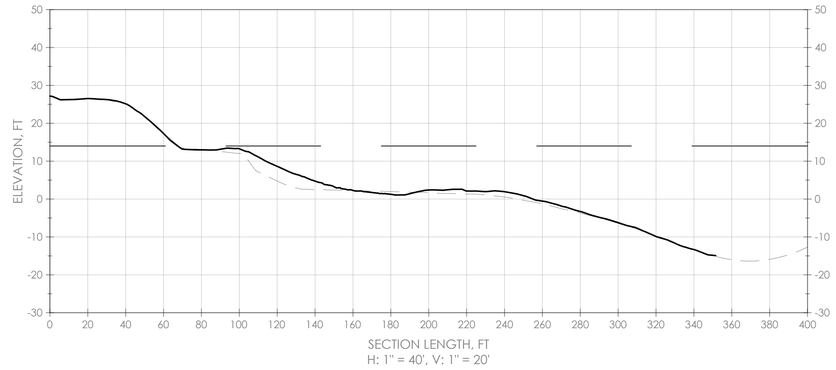
C2.2

PLOTTED ON: 2017-12-13 10:00 AM PLOTTED BY: Josh Elliott FILENAME: G:\00_MFA Civil\30\00_PROJECTS\9003.01.40 - Port of Ridgefield\Lake River Construction\PLANS\SECTIONS-ALL & CELL 3.dwg

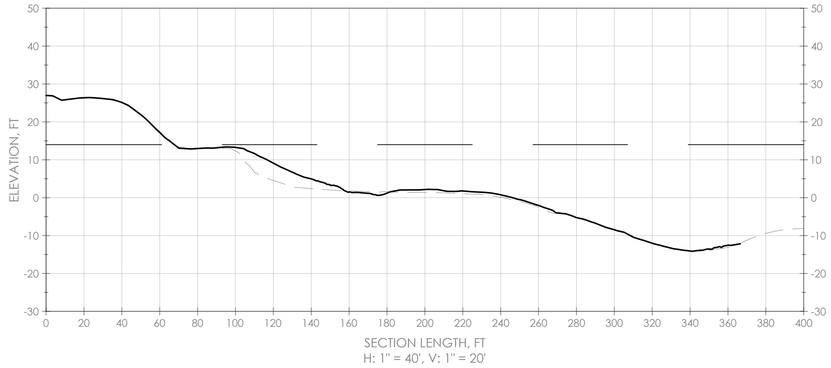
STA: 17+50



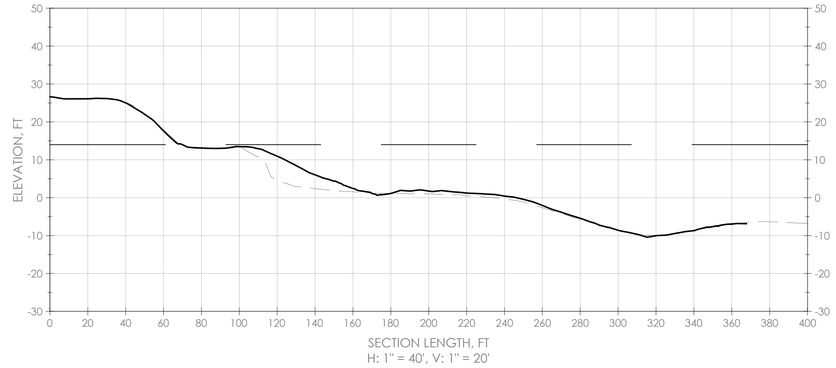
STA: 18+00



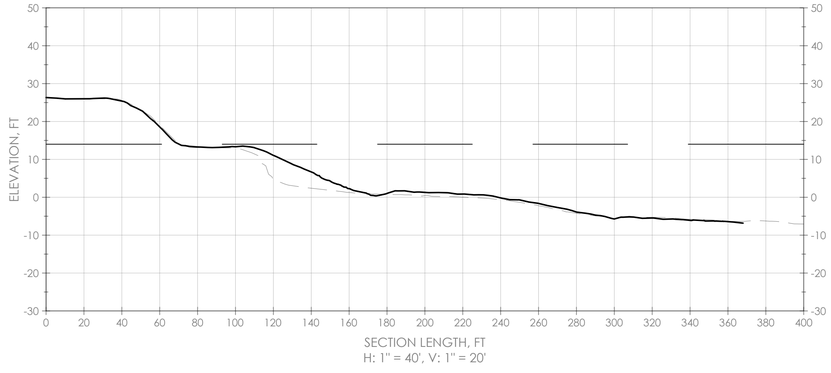
STA: 18+50



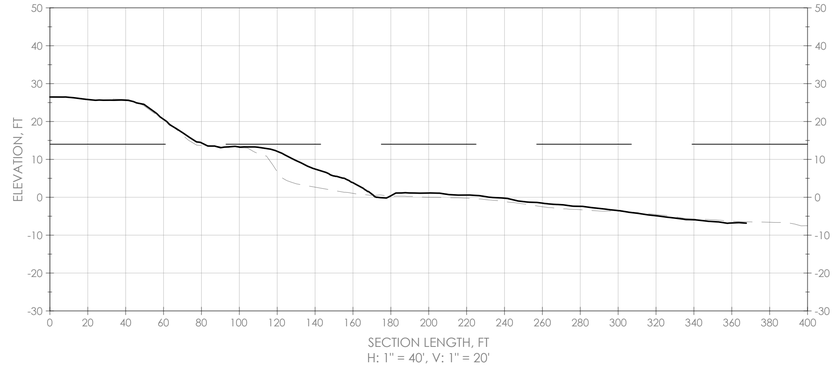
STA: 19+00



STA: 19+50



STA: 20+00



MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
PHONE: 360.694.2691
www.maulfoster.com

Port of Ridgefield

LAKE RIVER RECORD DRAWINGS
PORT OF RIDGEFIELD
RIDGEFIELD, WASHINGTON

ISSUE	DATE	DESCRIPTION
	---	---
	---	---
	---	---

PROJECT: 9003.01.40
DESIGNED: J. ELLIOTT
DRAWN: J. ELLIOTT
CHECKED: ---
SCALE

SCALE AS NOTED

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE

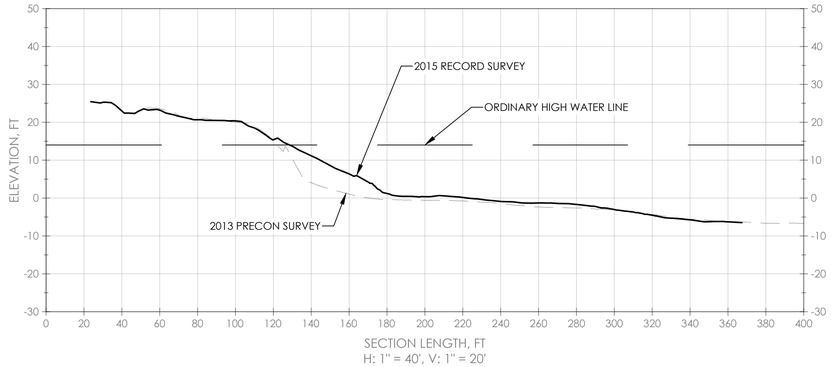
UPSTREAM SECTIONS (STA 17+50 TO STA 20+00)

SHEET

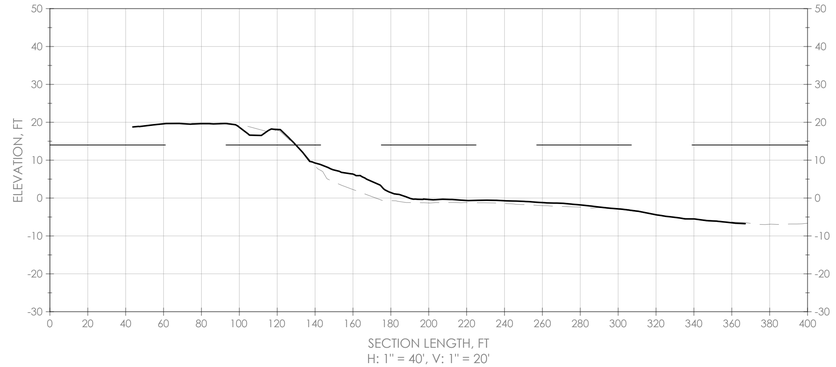
C2.3

PLOTTED ON: 2017-12-13 10:00 AM PLOTTED BY: Josh Elliott FILENAME: G:\00_MFA Civil\30\00_PROJECTS\9003.01.40 - Port of Ridgefield\Lake River Construction\PLANS\SECTIONS-ALL & CELL 3.dwg

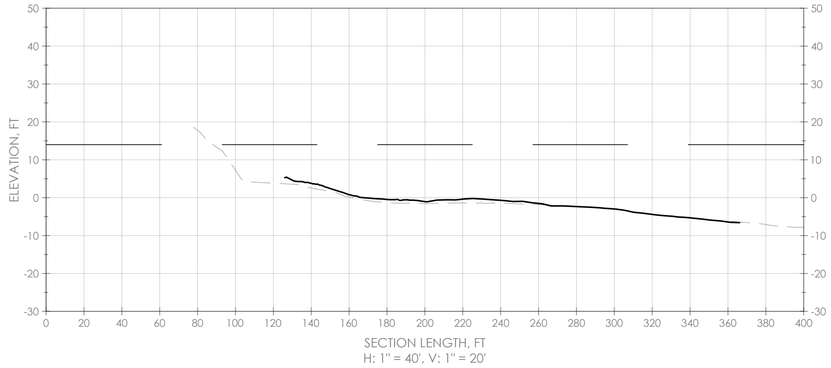
STA: 20+50



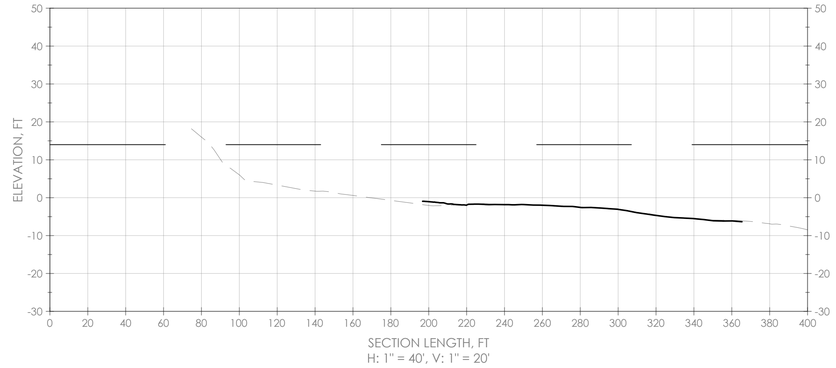
STA: 21+00



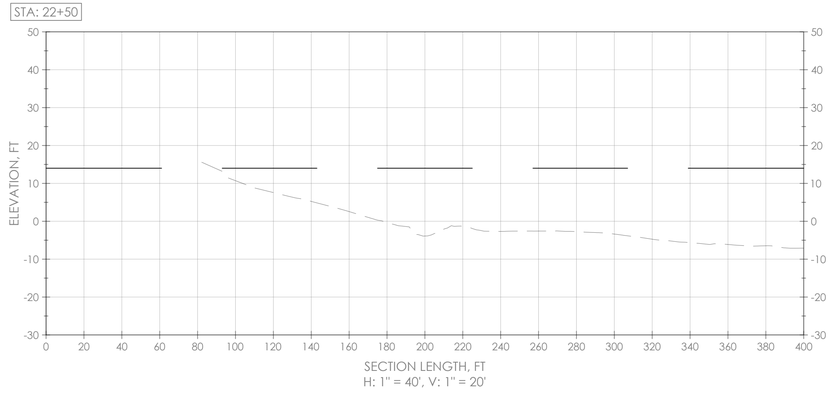
STA: 21+50



STA: 22+00



STA: 22+50



MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
PHONE: 360.694.2691
www.maulfoster.com

Port of Ridgefield

LAKE RIVER RECORD DRAWINGS

PORT OF RIDGEFIELD

RIDGEFIELD, WASHINGTON

ISSUE	DATE	DESCRIPTION
1	1	1

PROJECT: 9003.01.40

DESIGNED: J. ELLIOTT

DRAWN: J. ELLIOTT

CHECKED: ----

SCALE

SCALE AS NOTED

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

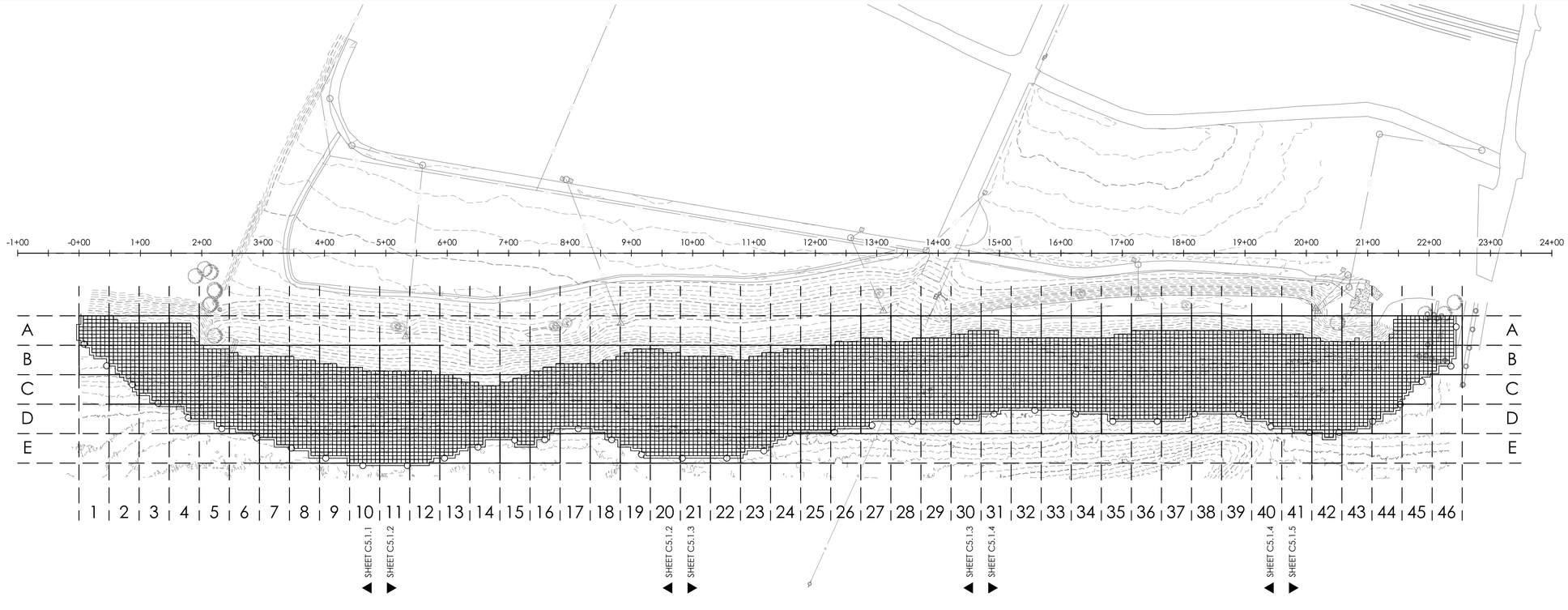
SHEET TITLE

UPSTREAM SECTIONS (STA 20+50 TO STA 22+50)

SHEET

C2.4

PLOTTED BY: Josh Elliott FILENAME: G:\00_MFA Civil\3D\00_PROJECTS\9003.01 40 - Port of Ridgefield\Lake River Construction\PLANS\SECTIONS\41 & CELL 3.dwg
PLOTTED ON: 2017-12-13 10:00 AM



PRECISION DREDGING SITE MAP NOTES:

1) EACH BUCKET GRID IS 6 FEET BY 7 FEET (WIDTH BY LENGTH).
2) APPROVAL UNITS ARE 48 FEET BY 49 FEET IN DIMENSION.

PRECISION DREDGING SITE MAP LEGEND:

- DREDGE GRID BOUNDARY
- LIMITS OF WORK
- APPROVAL UNIT LIMITS
- PRECISION GRID CELL
- 2015 RECORD SURVEY MAJOR CONTOUR (5' INTERVAL)
- 2015 RECORD SURVEY MINOR CONTOUR (1' INTERVAL)
- EXTG IRRIGATION PIPE (UNDERGROUND)
- EXTG STORMWATER PIPE
- EXTG MONITORING WELL
- EXTG STORMWATER CATCH BASIN
- EXTG STORMWATER MANHOLE
- EXTG STORMWATER OUTFALL
- ENR SAND ONLY

MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
PHONE: 360.694.2691
www.maulfoster.com

Port of Ridgefield

LAKE RIVER RECORD DRAWINGS
PORT OF RIDGEFIELD
RIDGEFIELD, WASHINGTON

ISSUE	DATE	DESCRIPTION
---	---	---

PROJECT: 9003.01.40
DESIGNED: J. ELLIOTT
DRAWN: J. ELLIOTT
CHECKED: ----

SCALE
0 100' 200'
NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE
PRECISION DREDGING AND APPROVAL UNIT SITE MAP

SHEET
C3.0

PLOTTED ON: 2017-12-13 10:51 AM PLOTTED BY: Josh Elliott FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\9003.01.40 - Port of Ridgefield\Lake River Construction\PLANS\C-GRID LAYOUT.dwg

MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
PHONE: 360.694.2691
www.maulfoster.com

Port of Ridgefield

LAKE RIVER RECORD DRAWINGS

PORT OF RIDGEFIELD
RIDGEFIELD, WASHINGTON

ISSUE	DATE	DESCRIPTION
---	---	---

PROJECT: 9003.01.40
DESIGNED: J. ELLIOTT
DRAWN: J. ELLIOTT
CHECKED: ----

SCALE

0 20' 40'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

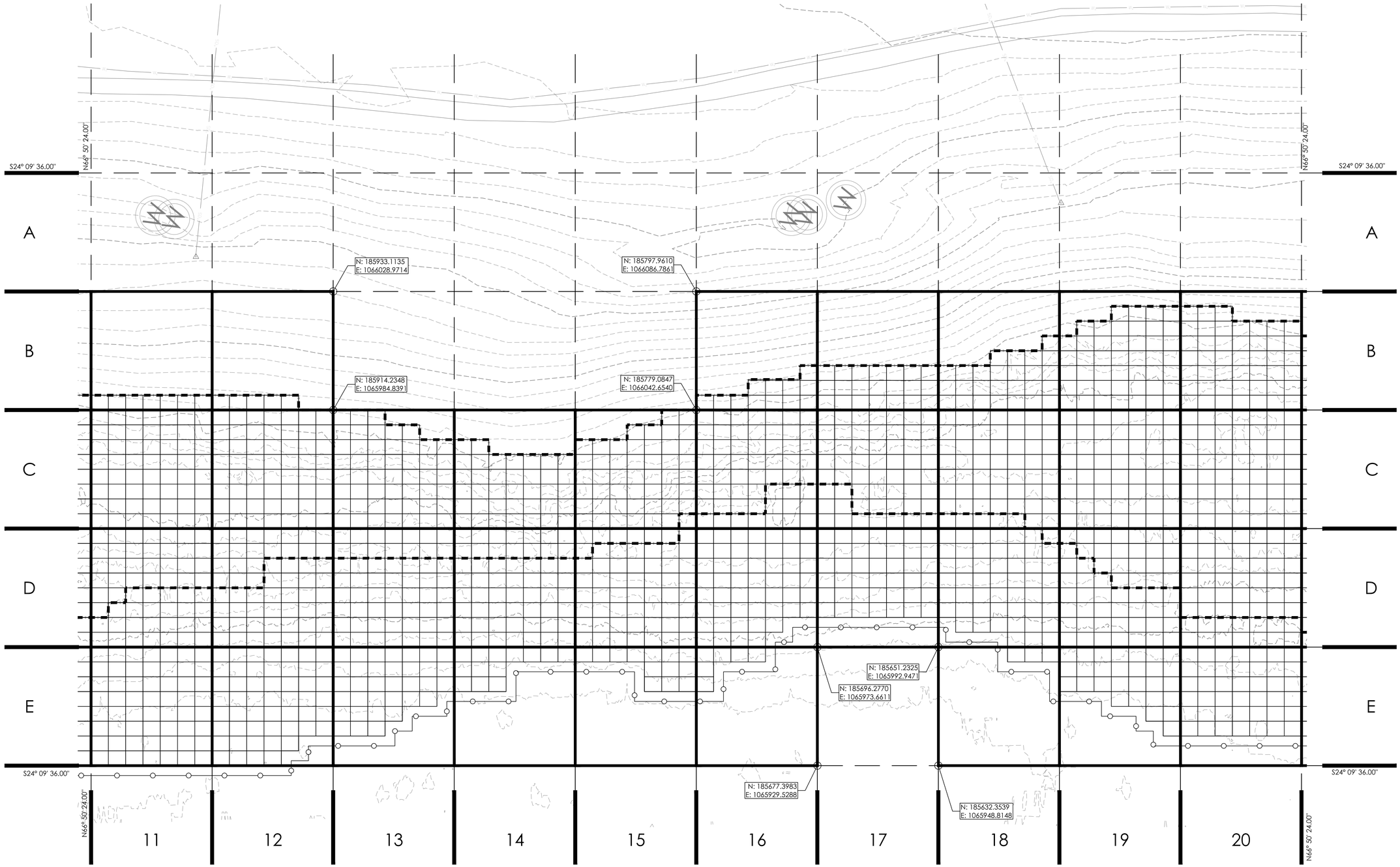
SHEET TITLE

ENLARGED PRECISION DREDGING PLAN 1

SHEET

C3.1

PLOTTED ON: 2017-12-13 10:51 AM PLOTTED BY: Josh Elliott FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\9003.01.40 - Port of Ridgefield\Lake River Construction\PLANS\C-GRID LAYOUT.dwg



MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
PHONE: 360.694.2691
www.maulfoster.com

Port of Ridgefield

LAKE RIVER RECORD DRAWINGS
PORT OF RIDGEFIELD
RIDGEFIELD, WASHINGTON

ISSUE	DATE	DESCRIPTION
---	---	---

PROJECT: 9003.01.40
DESIGNED: J. ELLIOTT
DRAWN: J. ELLIOTT
CHECKED: ----
SCALE

0 20' 40'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

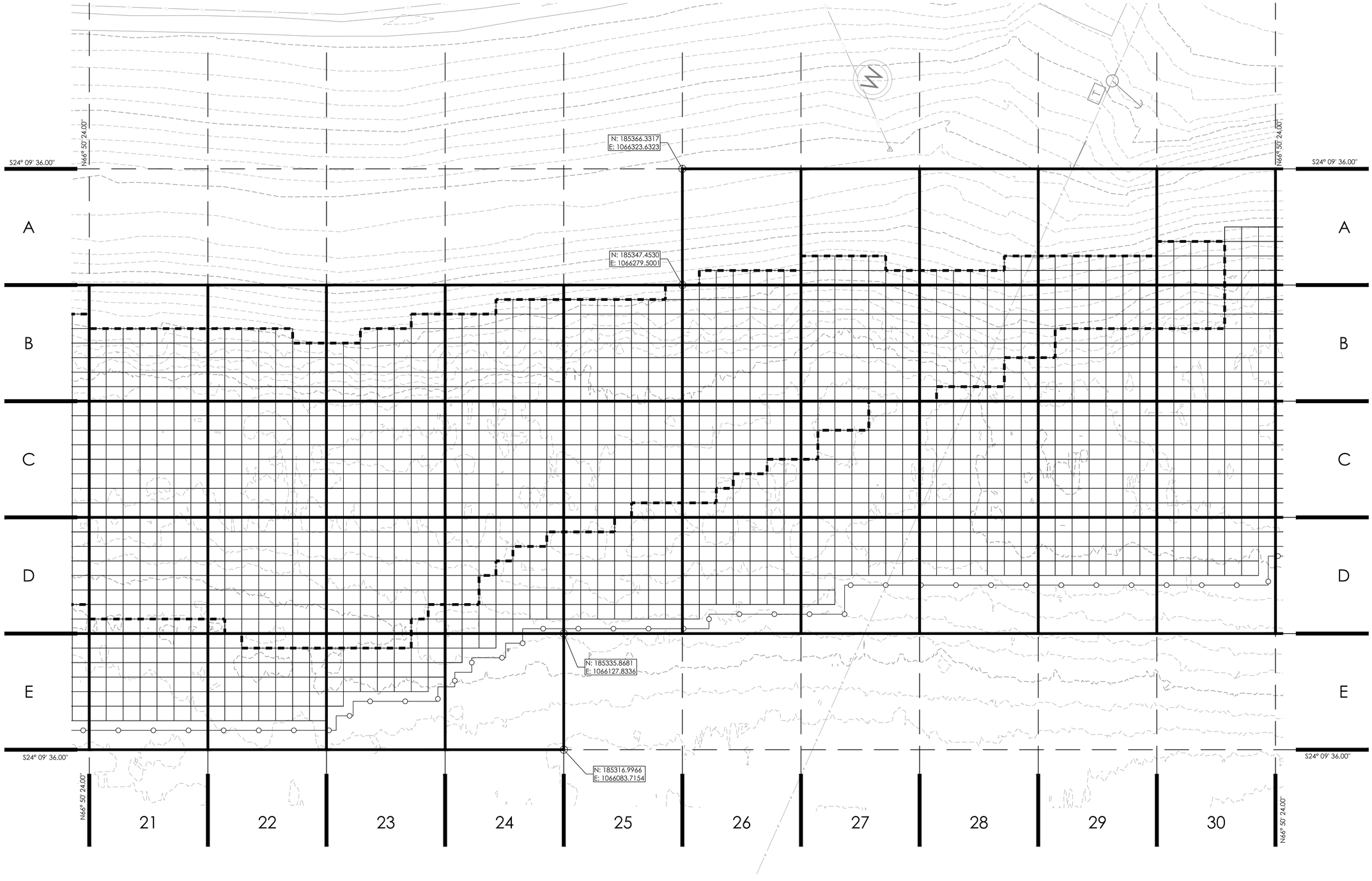
SHEET TITLE

ENLARGED PRECISION DREDGING PLAN 2

SHEET

C3.2

PLOTTED ON: 2017-12-13 10:51 AM PLOTTED BY: Josh Elliott FILENAME: G:\00_MFA Civil 3D\00_PROJECTS\9003.01.40 - Port of Ridgefield\Lake River Construction\PLANS\C-GRID LAYOUT.dwg



MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
PHONE: 360.694.2691
www.maulfoster.com

Port of Ridgefield

LAKE RIVER RECORD DRAWINGS

PORT OF RIDGEFIELD

RIDGEFIELD, WASHINGTON

ISSUE	DATE	DESCRIPTION

PROJECT: 9003.01.40

DESIGNED: J. ELLIOTT

DRAWN: J. ELLIOTT

CHECKED: ----

SCALE

0 20' 40'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

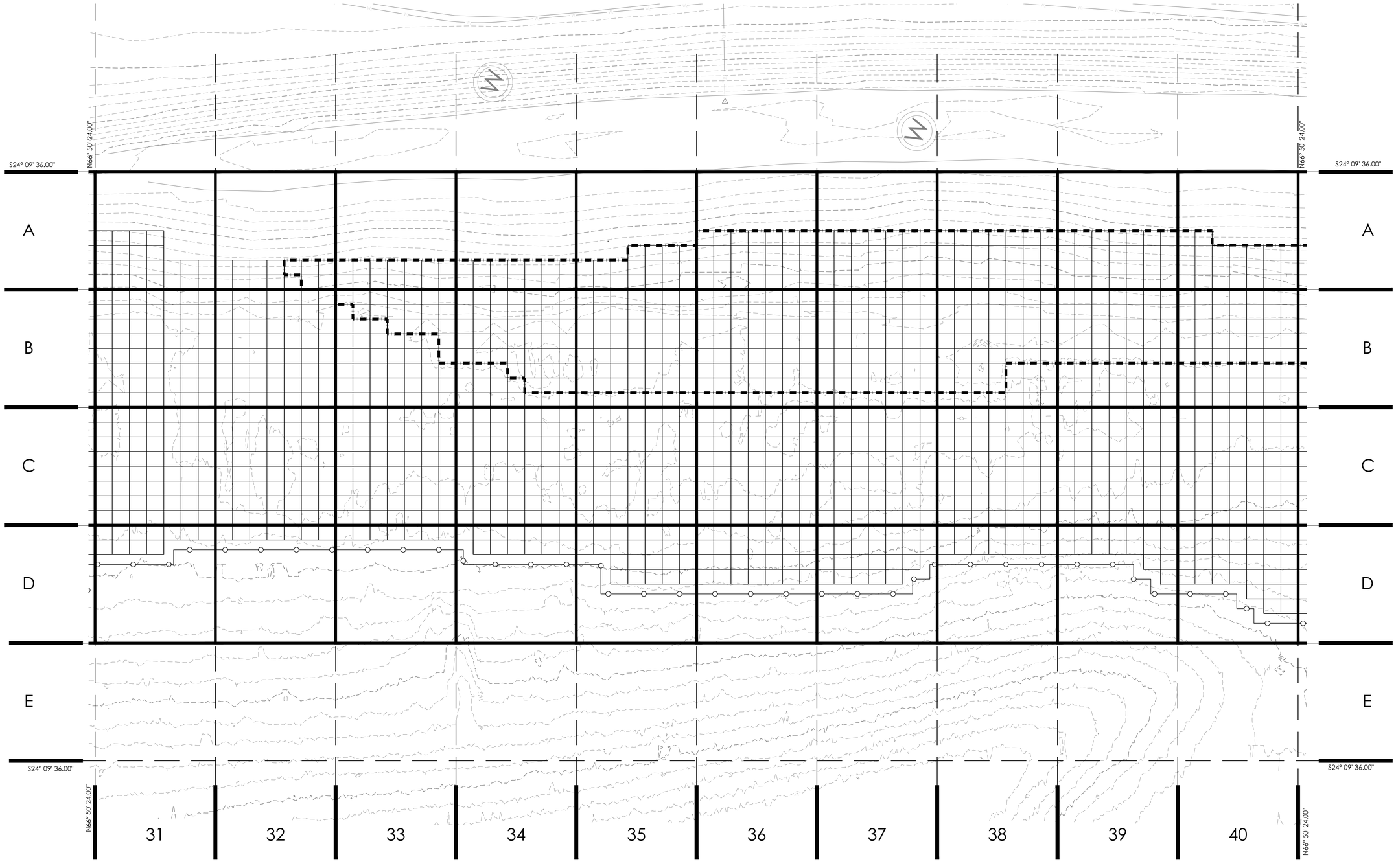
SHEET TITLE

ENLARGED PRECISION DREDGING PLAN 3

SHEET

C3.3

PLOTTED ON: 2017-12-13 10:01 AM PLOTTED BY: Josh Elliott FILENAME: G:\05_MFA Civil 3D\03_PROJECTS\9003.01 #3 - Port of Ridgefield\Lake River Construction\PLANS\C-03RD LAYOUT.dwg



MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
PHONE: 360.694.2691
www.maulfoster.com

Port of Ridgefield

LAKE RIVER RECORD DRAWINGS

PORT OF RIDGEFIELD

RIDGEFIELD, WASHINGTON

ISSUE	DATE	DESCRIPTION

PROJECT: 9003.01.40
DESIGNED: J. ELLIOTT
DRAWN: J. ELLIOTT
CHECKED: ----

SCALE

0 20' 40'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

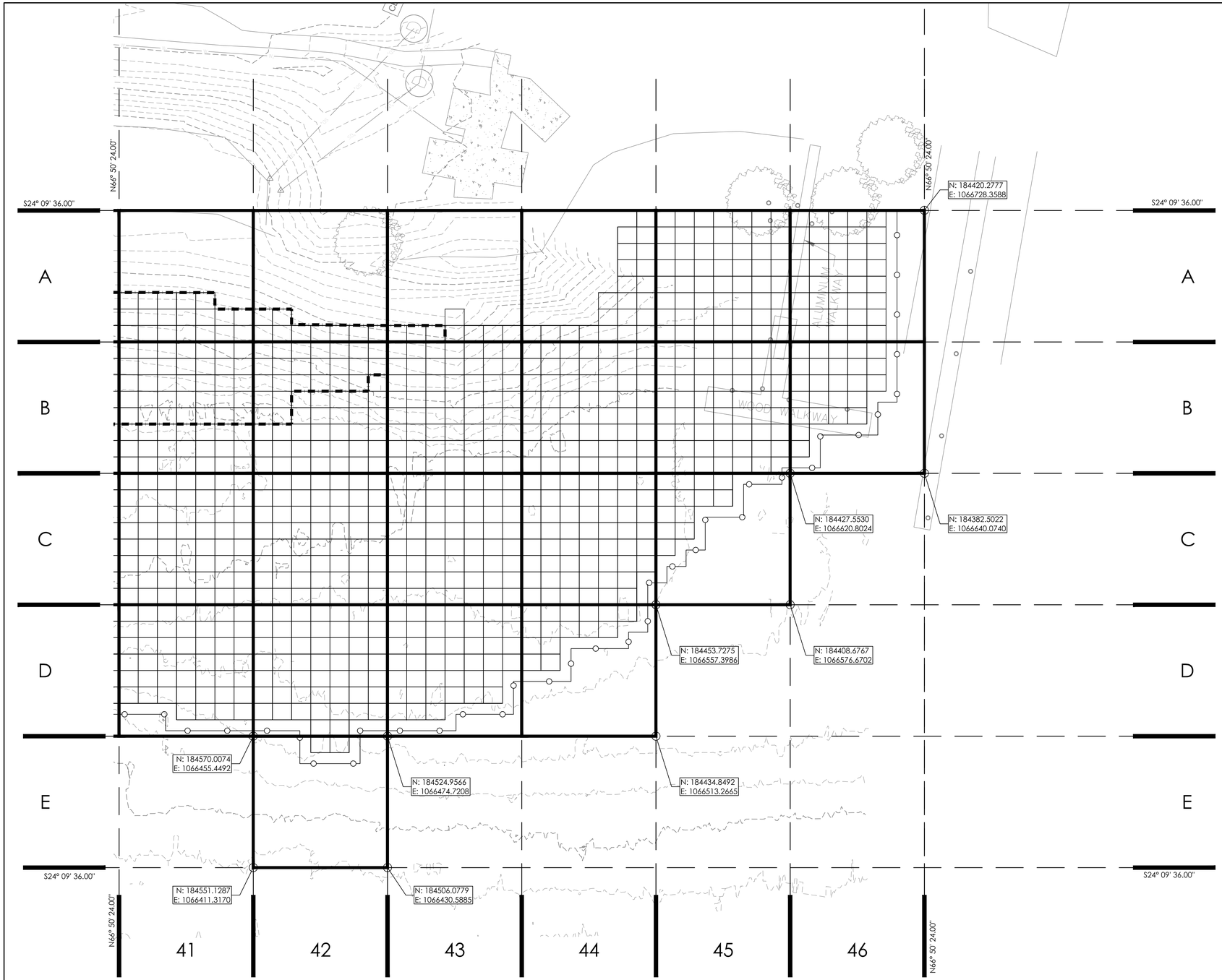
SHEET TITLE

ENLARGED PRECISION DREDGING PLAN 4

SHEET

C3.4

PLOTTED ON: 2017-12-13 10:01 AM PLOTTED BY: Josh Elliott FILENAME: G:\05_MFA Civil 3D\03_PROJECTS\9003.01.40 - Port of Ridgefield\Lake River Construction\PLANS\C-GRID LAYOUT.dwg



MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
PHONE: 360.694.2691
www.maulfoster.com

Port of Ridgefield

LAKE RIVER RECORD DRAWINGS

PORT OF RIDGEFIELD
RIDGEFIELD, WASHINGTON

ISSUE	DATE	DESCRIPTION
---	---	---

PROJECT: 9003.01.40
DESIGNED: J. ELLIOTT
DRAWN: J. ELLIOTT
CHECKED: ----

SCALE

0 20' 40'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

SHEET TITLE

ENLARGED PRECISION DREDGING PLAN 5

SHEET

C3.5

PLOTTED ON: 2017-12-13 10:51 AM PLOTTED BY: Josh Elliott FILENAME: G:\00_MFA Civil 3D\05_PROJECTS\9003.01.40 - Port of Ridgefield\Lake River Construction\PLANS\C-GRID LAYOUT.dwg

PLANT MATERIAL SCHEDULE

TREES AND SHRUBS

TOTAL QTY	GROVE #1 QTY	GROVE #2 QTY	GROVE #3 QTY	COMMON NAME	BOTANICAL NAME	SIZE	SPACING
4	2	2	0	DOUGLAS FIR	PSEUDOTSUGA MENZIESII	5 GAL	PER PLAN
4	2	1	1	WESTERN RED CEDAR	THUJA PLICATA	5 GAL	PER PLAN
4	1	2	1	OREGON ASH	FRAXINUS LATIFOLIA	1.5" CAL	PER PLAN
7	1	4	2	BITTER CHERRY	PRUNUS EMARGINATA	1.5" CAL	12'-0", O.C.
13	5	5	3	CHOKECHERRY	PRUNUS VIRGINIANA	1.5" CAL	12'-0", O.C.
10	5	3	2	PACIFIC WILLOW	SALIX LASIANDRA	1 GAL	12'-0", O.C.
4	1	3	0	SCOULER'S WILLOW	SALIX SCOULERIANA	1 GAL	12'-0", O.C.
70	33	25	12	PACIFIC NINEBARK	PHYSOCARPUS CAPITATUS	1 GAL	6'-0", O.C.
91	40	36	15	RED TWIG DOGWOOD	CORNUS SERICEA	1 GAL	5'-0", O.C.
190	66	91	33	SNOWBERRY	SYMPHORICARPOS ALBUS	1 GAL	4'-0", O.C.
125	36	59	30	R.F. CURRANT	RIBES SANGUINEUM	1 GAL	4'-0", O.C.
139	58	51	30	DOUGLAS' SPIRAEA	SPIRAEA DOUGLASII	1 GAL	4'-0", O.C.
248	88	96	64	NOOTKA ROSE	ROSA NUTKANA	1 GAL	3'-0", O.C.
94	48	27	19	BALDHIP ROSE	ROSA GYMNOCARPA	1 GAL	3'-0", O.C.

SEED MIXES

UPLAND UNDERSTORY MIX		% BY WEIGHT
IDAHO FESCUE	FESTUCA IDAHOENSIS	30 %
BLUE WILD RYE	ELYMUS GLAUCUS	25 %
ROEMER'S FESCUE	FESTUCA ROEMERI	10 %
CALIFORNIA BROME	BROMUS CARINATUS	10 %
CA OATGRASS	DANTHONIA CALIFORNICA	10 %
SLENDER HAIRGRASS	DESCHAMPSIA ELONGATA	5 %
MEADOW BARLEY	HORDEUM BRACHYANTHERUM	5 %
OREGON SUNSHINE	ERIOPHYLLUM LANATUM	2 %
COMMON CAMAS	CAMASSIA QUAMASH	2%
SMALL LUPINE	LUPINUS POLYCARPUS	1%

GRASSLAND MIX		
MEADOW BARLEY	HORDEUM BRACHYANTHERUM	35 %
CALIFORNIA BROME	BROMUS CARINATUS	30 %
NATIVE RED FESCUE	FESTUCA RUBRA RUBRA	20 %
CA OATGRASS	DANTHONIA CALIFORNICA	5 %
TUFTED HAIRGRASS	DESCHAMPSIA CAESPITOSA	5 %
WOOLY SUNFLOWER	ERIOPHYLLLUM LANATUM	3 %
PINE BLUEGRASS	POA SCABRELLA	2 %

ECO GRASS MIX		
NATIVE RED FESCUE	FESTUCA RUBRA RUBRA	45 %
CA OATGRASS	DANTHONIA CALIFORNICA	25 %
SHEEP FESCUE	FESTUCA OVINA	20 %
WESTERN YARROW	ACHILLEA MILLEFOLIUM	7 %
WHITE CLOVER	TRIFOLIUM REPENS	3 %

NOTES:
1. ALL PLANTING LOCATIONS SHOWN ARE APPROXIMATE.
2. ANY VEGETATION THAT IS DEAD OR DYING SHALL BE REPLACED IN LIKE KIND.

MAUL FOSTER ALONGI
400 EAST MILL PLAIN BLVD, SUITE 400
VANCOUVER, WA 98660
PHONE: 360.694.2691
www.maulfoster.com

Port of Ridgefield

LAKE RIVER RECORD DRAWINGS
PORT OF RIDGEFIELD
RIDGEFIELD, WASHINGTON

ISSUE	DATE	DESCRIPTION
1	1	1

PROJECT: 9003.01.40
DESIGNED: C. RILEY
DRAWN: C. RILEY
CHECKED: ----
SCALE

SHEET TITLE

LAKE RIVER
PLANTING PLAN

SHEET

L1.0

PLOTTED ON: 2017-12-13 10:01 AM PLOTTED BY: Josh Elliott FILENAME: G:\00_MFA Civil\9XX\00_PROJECTS\9003.01.40 - Port of Ridgefield\Lake River Construction\PLANS\LR_AS BUILT.dwg

APPENDIX A
PERMITS AND APPROVALS

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

September 25, 2014

Regulatory Branch

Mr. Brent Grening
Port of Ridgefield
Post Office Box 55
Ridgefield, Washington 98642

Reference: NWS-2013-875
Port of Ridgefield
(Lake River Remedial Action)

Dear Mr. Grening:

We have reviewed your application to dredge up to 14,000 cubic yards of contaminated sediment from 3.25 acres, place up to 26,000 cubic yards of sand and rock fill, and remove up to 100 existing piles and a 1,010 square foot float and gangway, to remediate contaminated sediments in Lake River, near the City of Ridgefield, Clark County, Washington. Based on the information you provided to us, Nationwide Permit (NWP) 38, Cleanup of Hazardous and Toxic Waste (Federal Register February 21, 2012, Vol. 77, No. 34), authorizes your proposal as depicted on the enclosed drawings dated September 25, 2014, provided you implement the mitigation plan dated 17 January 2014 and titled "Revised Lake River Riparian Enhancement Plan, Addendum to the Joint Aquatic Resources Permit Application".

In order for this authorization to be valid, you must ensure the work is performed in accordance with the enclosed *NWP 38 Terms and Conditions*, and the following special conditions:

a. You shall implement and abide by the archaeological monitoring and inadvertent discovery plan entitled "Final Archaeological Monitoring and Inadvertent Discovery Plan for the Lake River Remedial Action". A professional archaeologist shall be on-site to monitor for the presence of archaeological resources, for the monitoring areas identified in Section 3.1 of the plan.

b. You shall prepare and submit a summary report of the findings of the archaeological monitoring (positive or negative) to the U.S. Army Corps of Engineers, Seattle District, Regulatory Branch within 60 days after monitoring has been completed. The report must prominently display the reference number NWS-2013-875.

c. If human remains, historic resources, or archaeological resources are encountered during construction, all ground disturbing activities shall cease in the immediate area and you shall immediately (within one business day of discovery) notify the U.S. Army Corps of Engineers (Corps), Seattle District, Regulatory Branch. You shall perform any work required by the Corps in accordance with Section 106 of the National Historic Preservation Act and Corps regulations.

d. You must implement and abide by the Endangered Species Act (ESA) requirements and/or agreements set forth in the Biological Evaluation titled "Biological Evaluation for Informal ESA Consultation for: NWS-2013-875 (Corps Reference Number)", dated September 24, 2013, in its entirety. The National Marine Fisheries Service (NMFS) concurred with a finding of "may affect, not likely to adversely affect" based on this document on April 10, 2014 (NMFS Reference Number #WCR 2013-104). The U.S. Fish and Wildlife Service (USFWS) concurred with a finding of "may affect, not likely to adversely affect" based on this document on December 19, 2013 (USFWS Reference Number #01EWFW00-2014-I-0060). Both agencies will be informed of this permit issuance. Failure to comply with the commitments made in this document constitutes non-compliance with the ESA and your Corps permit. The USFWS/NMFS is the appropriate authority to determine compliance with ESA.

e. In order to meet the requirements of the Endangered Species Act and for the protection of listed Columbia River Chinook, steelhead, coho, chum, bull trout, and eulachon, the permittee may conduct the authorized activities from October 1 through January 15 in any year this permit is valid. The permittee shall not conduct work authorized by this permit from January 16 through September 30 in any year this permit is valid.

We have reviewed your project pursuant to the requirements of the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act and the National Historic Preservation Act. We have determined this project complies with the requirements of these laws provided you comply with all of the permit general and special conditions.

As part of our permit application review process, we notified Native American tribes that have an interest in this area. The Cowlitz Indian Tribe and the Confederated Tribes of the Grand Ronde Community requested their archaeology staff have the opportunity to be present to observe construction. Based on our coordination, you agreed to allow Tribal staff access. Please

contact Mr. Dustin Kennedy of the Confederated Tribes of the Grand Ronde Community at (503) 879-1679, and Mr. dAve burlingame of the Cowlitz Indian Tribe at (360) 577-6962, prior to commencing construction activities.

The authorized work complies with the Washington State Department of Ecology's (Ecology) Water Quality Certification requirements for this NWP.

Lake River is a water of the United States. If you believe this is inaccurate, you may request a preliminary or approved jurisdictional determination (JD). If one is requested, please be aware that we may require the submittal of additional information to complete the JD and work authorized in this letter may not occur until the JD has been completed.

Our verification of this NWP authorization is valid until March 18, 2017, unless the NWP is modified, reissued, or revoked prior to that date. If the authorized work has not been completed by that date and you have commenced or are under contract to commence this activity before March 18, 2017, you will have until March 18, 2018, to complete the activity under the enclosed terms and conditions of this NWP. Failure to comply with all terms and conditions of this NWP verification invalidates this authorization and could result in a violation of Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act. You must also obtain all local, State, and other Federal permits that apply to this project.

Please note that this verification only authorizes the above-described work. A separate Department of the Army authorization will be required for replacement or relocation of existing piers, ramps, floats, and piling.

Upon completing the authorized work, you must fill out and return the enclosed *Certificate of Compliance with Department of the Army Permit* form. Thank you for your cooperation during the permitting process. We are interested in your experience with our Regulatory Program and encourage you to complete a customer service survey form. This form and information about our program is available on our website at www.nws.usace.army.mil select "Regulatory Branch, Permit Information" and then "Contact Us." A copy of this letter with

enclosures will be furnished to Ms. Madi Novak of Maul Foster & Alongi, Inc., 2001 NW 19th Avenue, Suite 200, Portland, Oregon 97209. If you have any questions, please contact me at Steven.W.Manlow@usace.army.mil or (206) 316-3047.

Sincerely,

Steve Manlow, Project Manager
Regulatory Branch

Enclosures

cc: letter only via email to Washington Department of Ecology, Federal Permit Coordinator at: ecyrefedpermits@ecy.wa.gov

cc: w/drawings only: U.S. Fish and Wildlife Service, Lacey
National Marine Fisheries Service, Lacey

LAKE RIVER SEDIMENT REMEDIATION

REFERENCE: NWP-2013-875

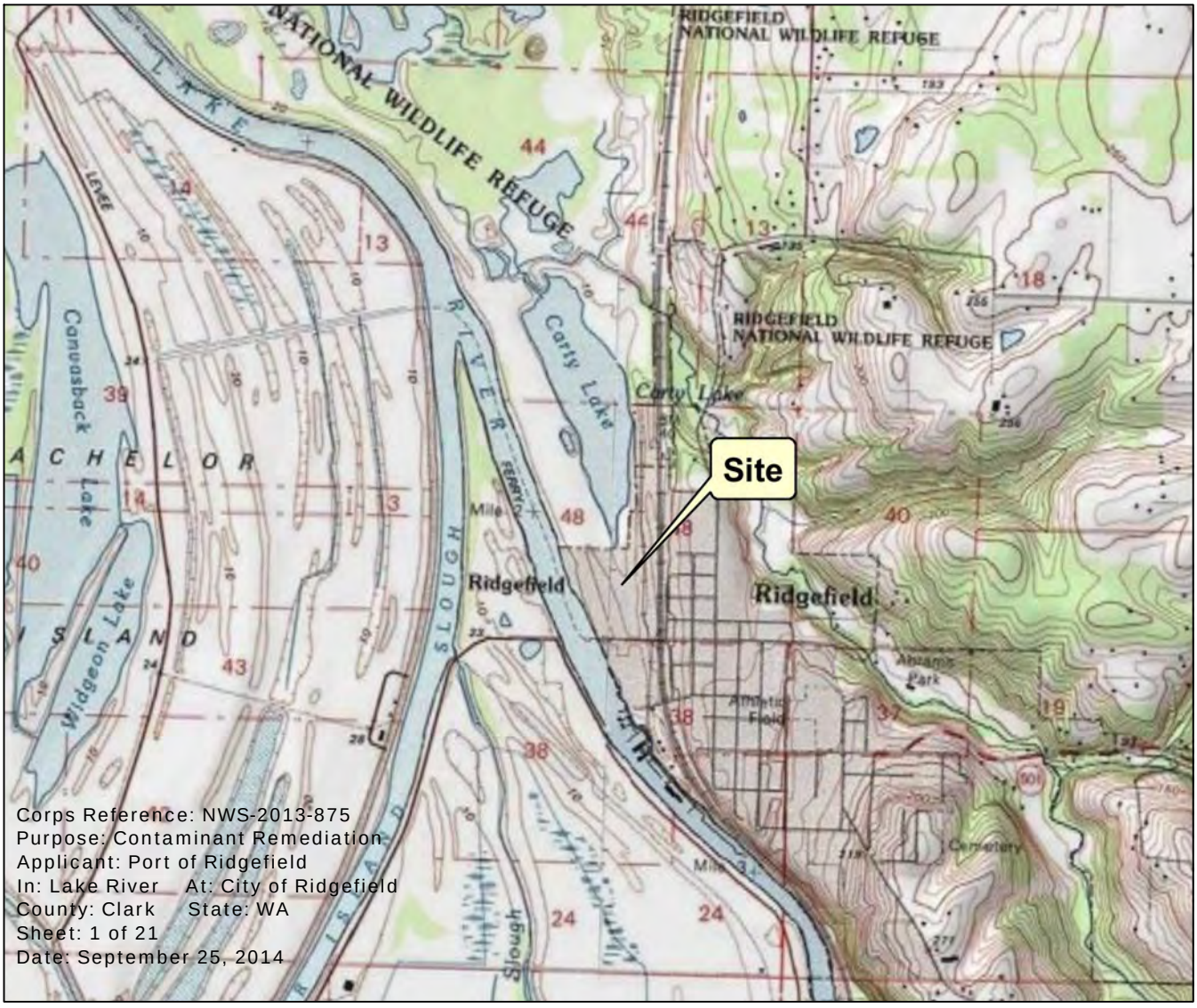
APPLICANT: PORT OF RIDGEFIELD

LOCATION: RIDGEFIELD, WASHINGTON

LAT/LONG: 45° 49' 4.7" N, 122° 45' 4.8" W

IN: LAKE RIVER
NEAR/AT: RIDGEFIELD, WASHINGTON
COUNTY: CLARK

ADJACENT PROPERTY OWNERS:
1. PORT OF RIDGEFIELD
2. WASHINGTON DEPARTMENT OF NATURAL RESOURCES
3. RIDGEFIELD NATIONAL WILDLIFE REFUGE
4. MICHAEL McCUDDY (McCUDDY'S RIDGEFIELD MARINA)
5. KERRY LOG AND RAFT CO.



MFA JOB #:	9003.01.40
ISSUE DATE:	7/24/2013
CHECKED:	E. BAKKOM
DRAWN:	J. FAUST

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

COVER SHEET

LAKE RIVER REMEDIAL ACTION

PORT OF RIDGEFIELD
RIDGEFIELD, WA

REFERENCE #:
NWS-2013-875

SHEET
C0

LAKE RIVER SEDIMENT REMEDIATON

PROJECT CONTROLS ARE ESTABLISHED ON THE FOLLOWING
VERTICAL AND HORIZONTAL DATUMS:

VERTICAL DATUM: NGVD 29
HORIZONTAL DATUM: NAD83 WASHINGTON STATE PLANE, SOUTH ZONE, US FOOT

Sheet List Table	
Sheet Number	Sheet Title
C0	COVER SHEET
C1	SHEET LIST
C2	EXISTING CONDITIONS OVERVIEW
C3	EXISTING CONDITIONS
C4	EXISTING CONDITIONS
C5	EXISTING CONDITIONS
C6	EXISTING CONDITIONS
C7	EXISTING CONDITIONS
C8	EXISTING CONDITIONS
C9	REMEDY OVERVIEW
C10	REMEDY PLAN
C11	REMEDY PLAN
C12	REMEDY PLAN
C13	REMEDY PLAN
C14	REMEDY PLAN
C15	REMEDY PLAN
C16	TYPICAL SECTIONS 1 & 2
C17	TYPICAL SECTIONS 3 & 4
C18	TYPICAL SECTION 5

Corps Reference: NWS-2013-875
Purpose: Contaminant Remediation
Applicant: Port of Ridgefield
In: Lake River At: City of Ridgefield
County: Clark State: WA
Sheet: 2 of 21
Date: September 25, 2014

Filepath: g:\00_mfa civil 3d\00_projects\9003.01.40 - port of ridgefield\lake river initial design\PLANS\acoe-8.5x11\C0 Cover Sheet (ACOE).dwg
Printed by: Jacob Faust
Date: 9/20/2013 12:30:25 PM

MFA JOB #:	9003.01.40
ISSUE DATE:	XX/XX/2013
CHECKED:	E. BAKKOM
DRAWN:	J. FAUST

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

SHEET LIST

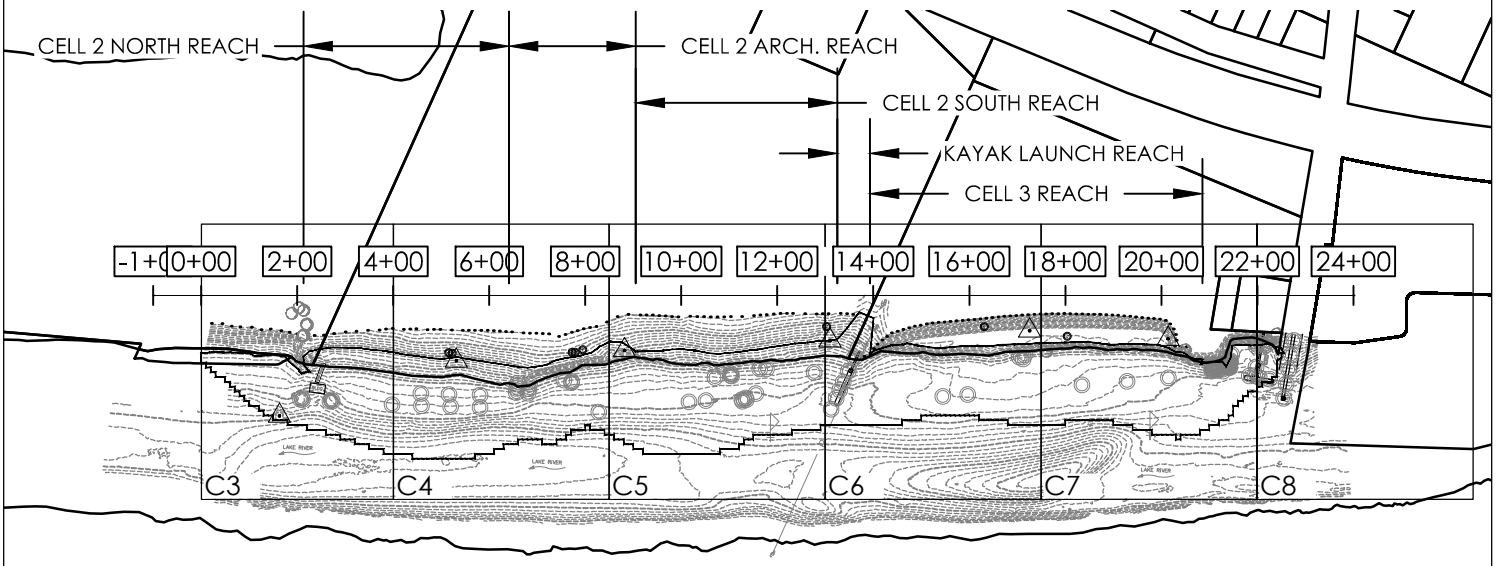
LAKE RIVER REMEDIAL ACTION
PORT OF RIDGEFIELD
RIDGEFIELD, WA

REFERENCE #:
NWS-2013-875

SHEET
C1

0 400' 800'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.



EXISTING CONDITIONS PLAN LEGEND

- EXISTING LOT LINE
- EXISTING CONTOUR LINE
- EXISTING TOP OF BANK LINE
- EXISTING OVERHEAD POWER LINE
- BANK AND SEDIMENT INTERFACE LINE
- EXISTING TREE
- EXISTING MONITORING WELL
- EXISTING PILE
- EXISTING STORMWATER OUTFALL
- EXISTING BUOY

Corps Reference: NWS-2013-875
Purpose: Contaminant Remediation
Applicant: Port of Ridgefield
In: Lake River At: City of Ridgefield
County: Clark State: WA
Sheet: 3 of 21
Date: September 25, 2014

NOTES:
1. ALL PILES WITHIN WORK BOUNDARY TO BE REMOVED. PILES MAY BE REPLACED AT THE DISCRETION OF THE OWNER.
2. SITE FEATURES ARE BASED ON BEST AVAILABLE INFORMATION INCLUDING SITE SURVEY AND FIELD INVESTIGATION.

PERMIT DOCUMENT

MFA JOB #:	9003.01.40
ISSUE DATE:	~~7/24/2013~~ XXXXXX
CHECKED:	E. BAKKOM
DRAWN:	J. FAUST

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

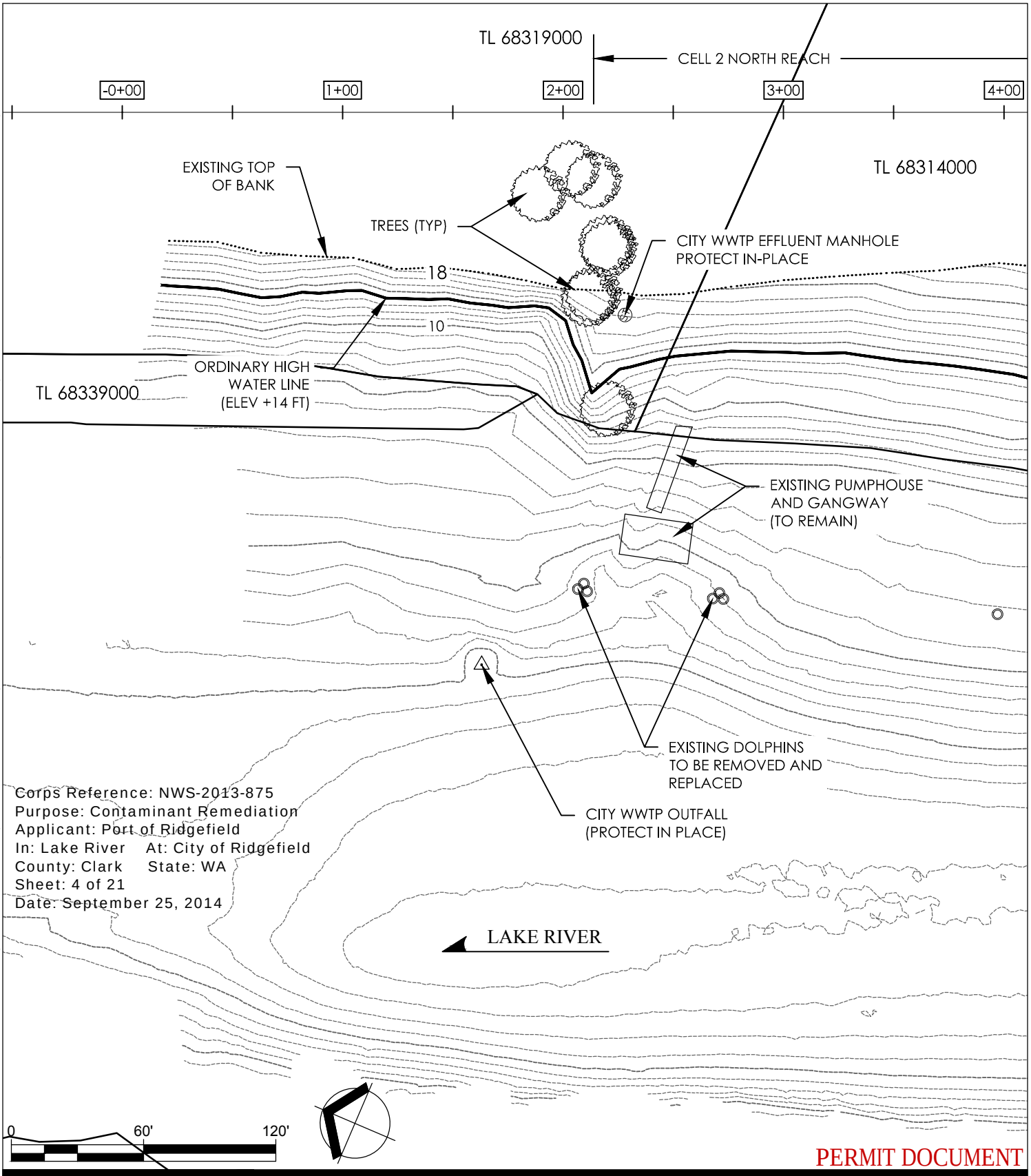
EXISTING CONDITIONS OVERVIEW

LAKE RIVER REMEDIAL ACTION

PORT OF RIDGEFIELD
RIDGEFIELD, WA

REFERENCE #: NWS-2013-875

SHEET
C2



PERMIT DOCUMENT

Filepath: g:\00_mfa civil 3d\00_projects\9003.01.40 - port of ridgefield\lake river initial design\PLANS\acoe-8.5x11\C0.1 Existing Conditions and Proposed Limits of Work (ACOE).dwg

Printed by: Jacob Faust

Date: 9/20/2013 12:34:39 PM

MFA JOB #:	9003.01.40
ISSUE DATE:	~~7/24/2013~~
CHECKED:	E. BAKKOM
DRAWN:	J. FAUST

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

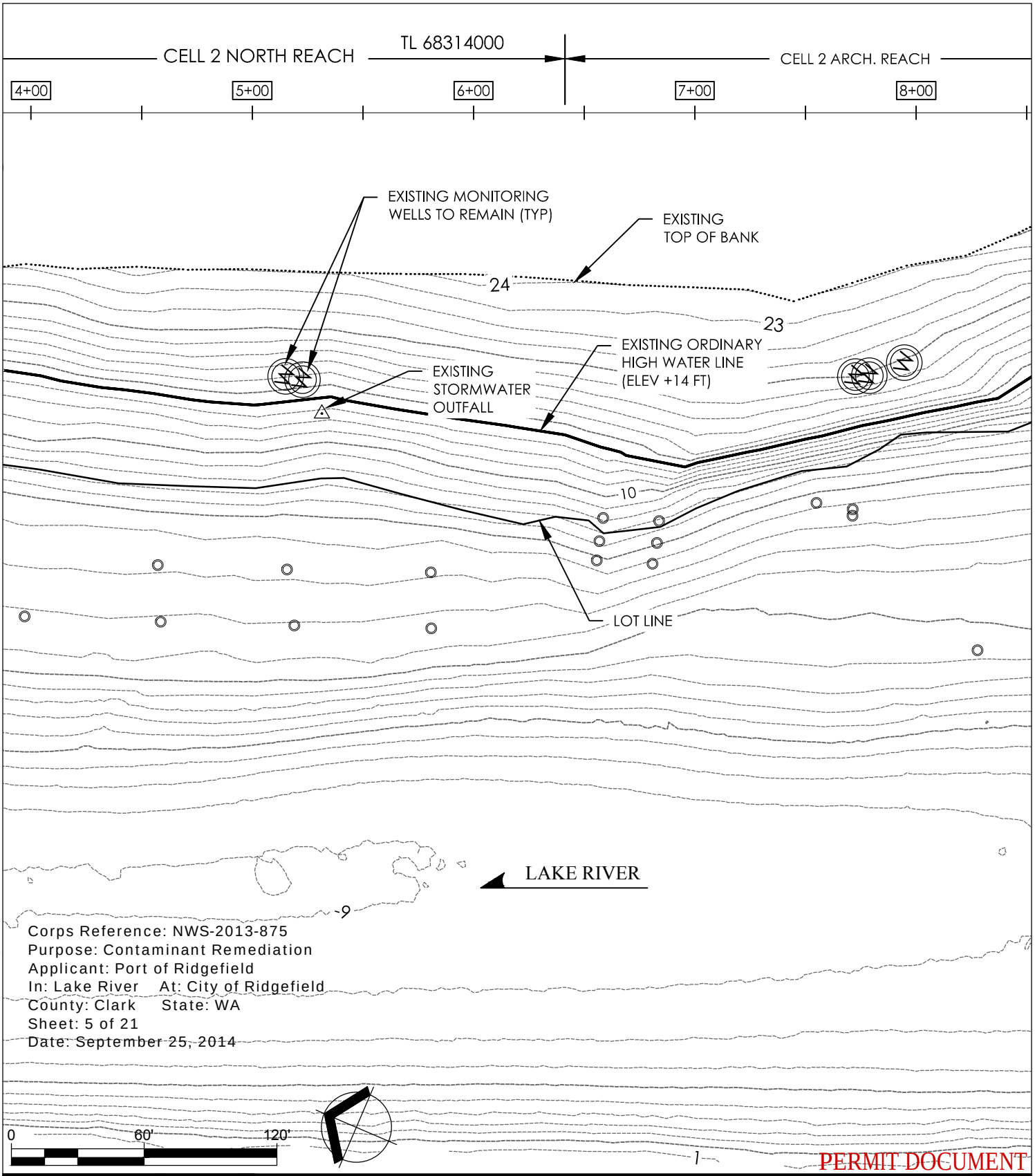
EXISTING CONDITIONS

LAKE RIVER REMEDIAL ACTION

PORT OF RIDGEFIELD
RIDGEFIELD, WA

REFERENCE #: NWS-2013-875

SHEET
C3



Corps Reference: NWS-2013-875
Purpose: Contaminant Remediation
Applicant: Port of Ridgefield
In: Lake River At: City of Ridgefield
County: Clark State: WA
Sheet: 5 of 21
Date: September 25, 2014

PERMIT DOCUMENT

MFA JOB #:	9003.01.40
ISSUE DATE:	~~7/24/2013~~ XX/XX/XX
CHECKED:	E. BAKKOM
DRAWN:	J. FAUST

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

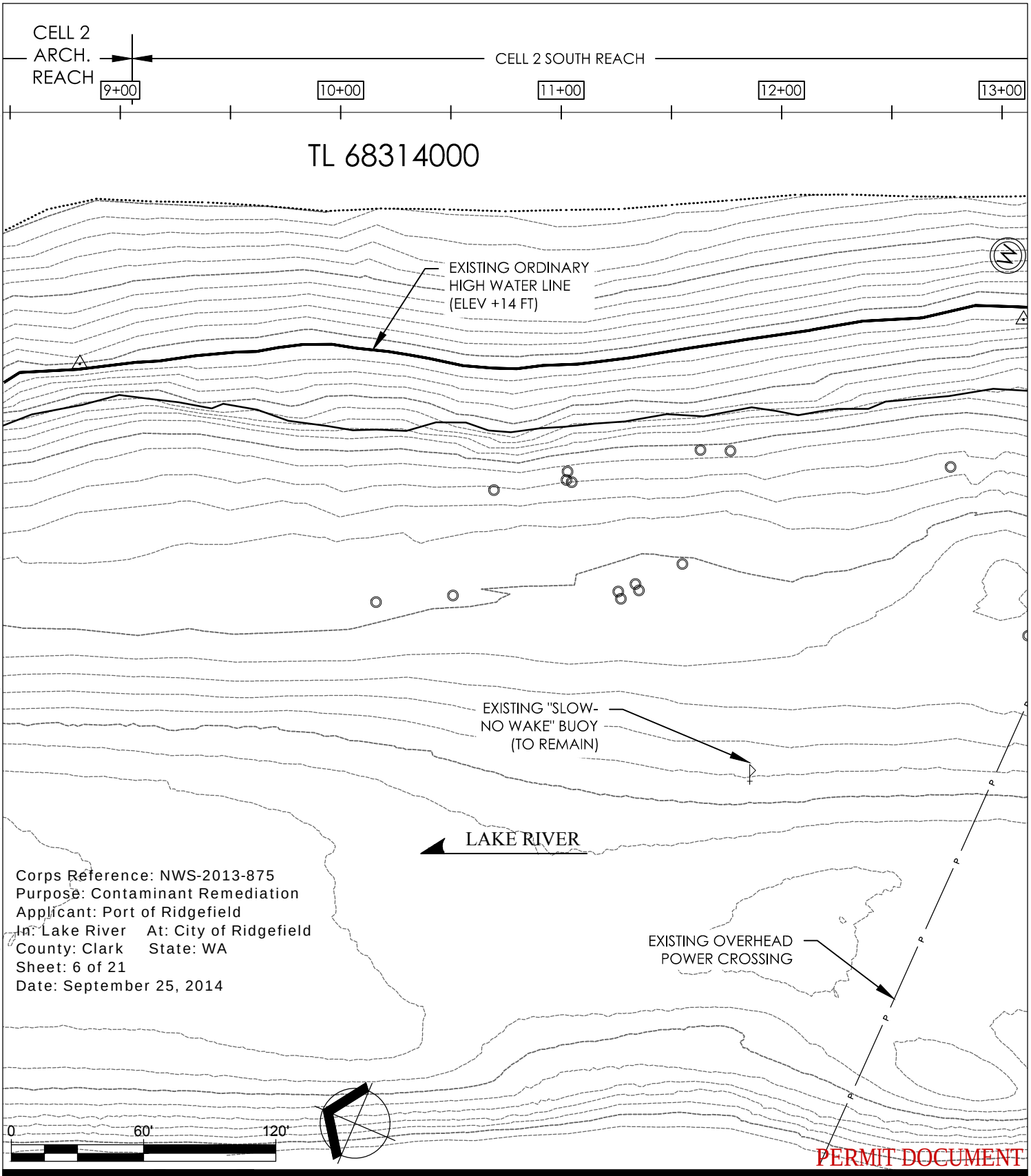
EXISTING CONDITIONS

LAKE RIVER REMEDIAL ACTION

PORT OF RIDGEFIELD
RIDGEFIELD, WA

REFERENCE #:
NWS-2013-875

SHEET
C4



Filepath: g:\00_mfa civil 3d\00_projects\9003.01.40 - port of ridgefield\lake river initial design\PLANS\acoe-8.5x11\C0.1 Existing Conditions and Proposed Limits of Work (ACOE).dwg

Printed by: Jacob Faust

Date: 9/20/2013 12:34:42 PM

MFA JOB #:	9003.01.40
ISSUE DATE:	XXXXXX 7/24/2013
CHECKED:	E. BAKKOM
DRAWN:	J. FAUST

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

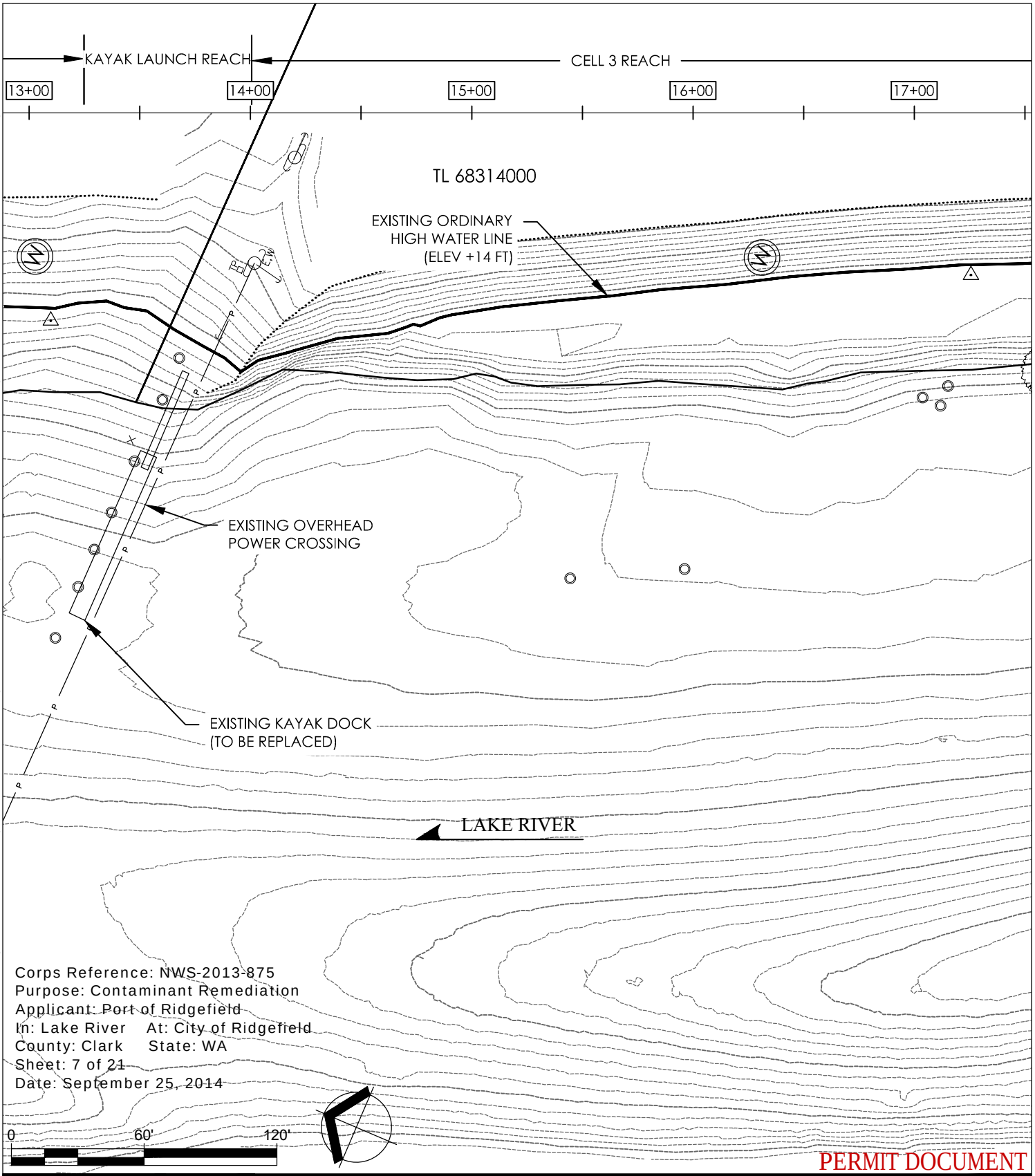
EXISTING CONDITIONS

LAKE RIVER REMEDIAL ACTION

PORT OF RIDGEFIELD
RIDGEFIELD, WA

REFERENCE #:
NWS-2013-875

SHEET
C5



Filepath: g:\00_mfa civil 3d\00_projects\9003.01.40 - port of ridgefield\lake river initial design\PLANS\acoe-8.5x11\C0.1 Existing Conditions and Proposed Limits of Work (ACOE).dwg

Printed by: Jacob Faust

Date: 9/20/2013 12:34:44 PM

MFA JOB #:	9003.01.40
ISSUE DATE:	~~7/24/2013~~ XXXXXXX
CHECKED:	E. BAKKOM
DRAWN:	J. FAUST

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

EXISTING CONDITIONS

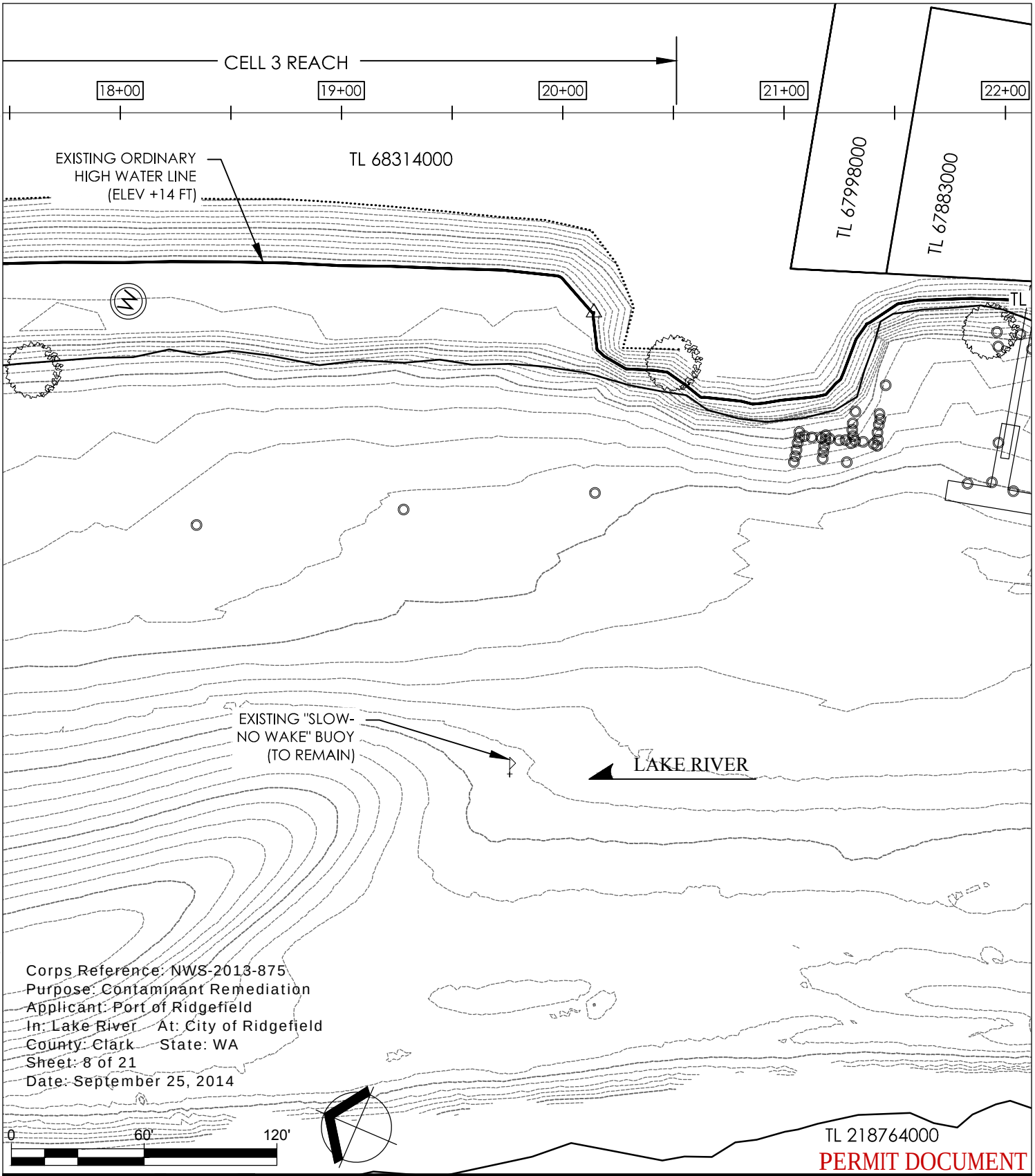
LAKE RIVER REMEDIAL ACTION

PORT OF RIDGEFIELD

RIDGEFIELD, WA

REFERENCE #:
NWS-2013-875

SHEET
C6



Filepath: g:\00_mfa civil 3d\00_projects\9003.01.40 - port of ridgefield\lake river initial design\PLANS\acoe-8.5x11\C0.1 Existing Conditions and Proposed Limits of Work (ACOE).dwg

Printed by: Jacob Faust

Date: 9/20/2013 12:34:45 PM

MFA JOB #:	9003.01.40
ISSUE DATE:	~~7/24/2013~~ XXXXXX
CHECKED:	E. BAKKOM
DRAWN:	J. FAUST

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

EXISTING CONDITIONS

LAKE RIVER REMEDIAL ACTION

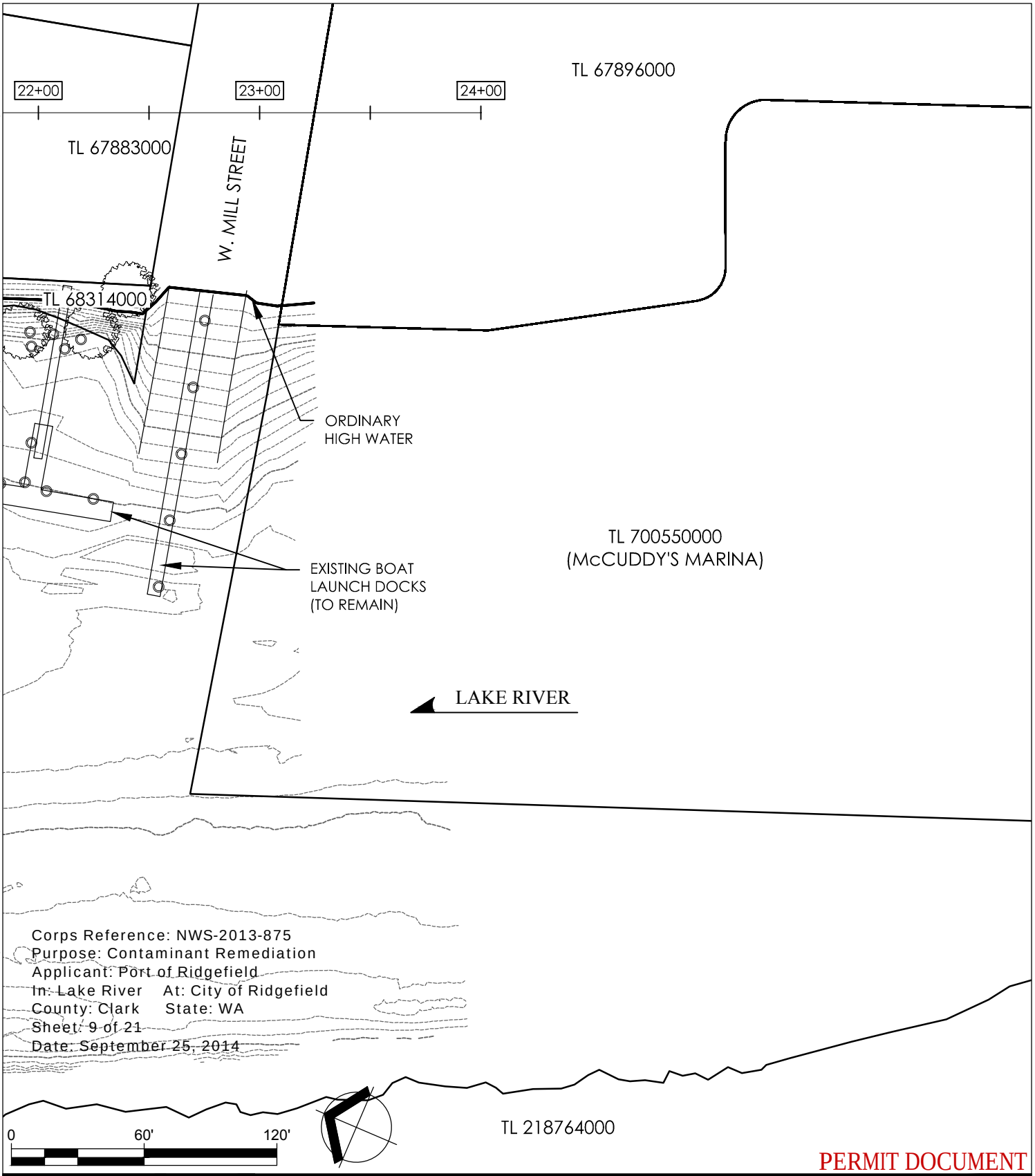
PORT OF RIDGEFIELD

RIDGEFIELD, WA

REFERENCE #: NWS-2013-875

SHEET

C7



PERMIT DOCUMENT

MFA JOB #:	9003.01.40
ISSUE DATE:	XXXXXX
CHECKED:	E. BAKKOM
DRAWN:	J. FAUST

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

EXISTING CONDITIONS

LAKE RIVER REMEDIAL ACTION

PORT OF RIDGEFIELD

RIDGEFIELD, WA

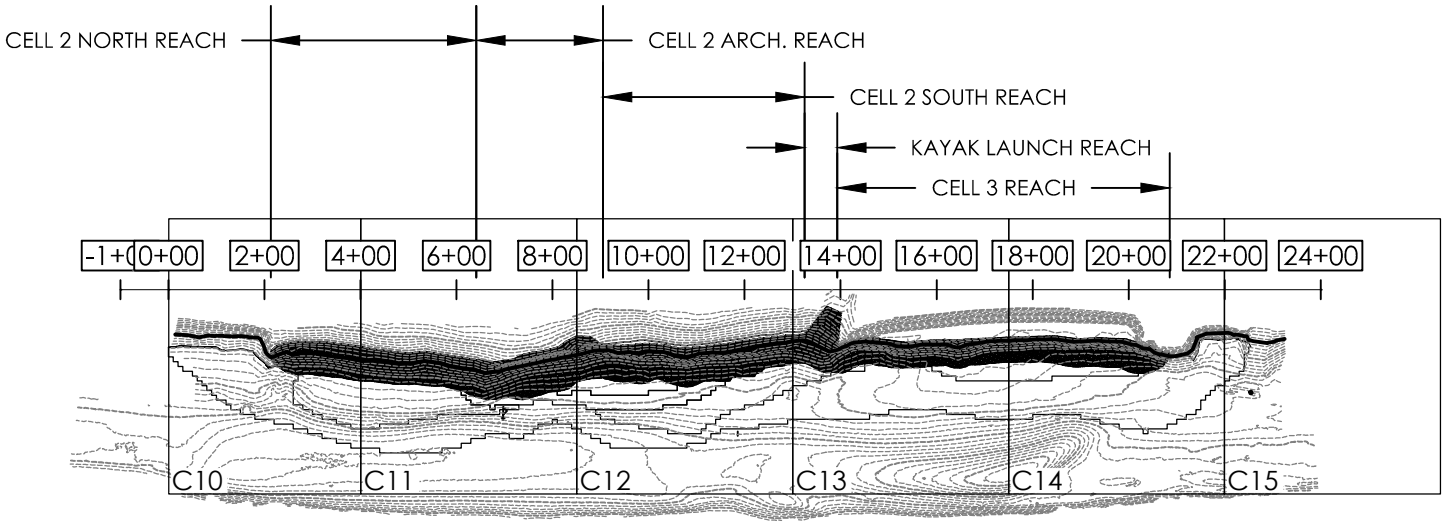
REFERENCE #:
NWS-2013-875

SHEET
C8

0 400' 800'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

Corps Reference: NWS-2013-875
Purpose: Contaminant Remediation
Applicant: Port of Ridgefield
In: Lake River At: City of Ridgefield
County: Clark State: WA
Sheet: 10 of 21
Date: September 25, 2014



PROPOSED REMEDY PLAN LEGEND

- EXISTING LOT LINE
- EXISTING CONTOUR LINE
- EXISTING TOP OF BANK LINE
- EXISTING OVERHEAD POWER LINE
- BANK AND SEDIMENT INTERFACE LINE
- PROPOSED FISH MIX
- ONE-FOOT DEPTH DREDGE AREA
- TWO-FOOT DEPTH DREDGE AREA
- THREE-FOOT DEPTH DREDGE AREA
- PROPOSED ENR LAYER PLACEMENT AREA
- EXISTING TREE
- EXISTING MONITORING WELL
- EXISTING PILE
- EXISTING STORMWATER OUTFALL
- EXISTING BUOY
- PROPOSED BUOY

PERMIT DOCUMENT

MFA JOB #:	9003.01.40
ISSUE DATE:	7/24/2013
CHECKED:	E. BAKKOM
DRAWN:	J. FAUST

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

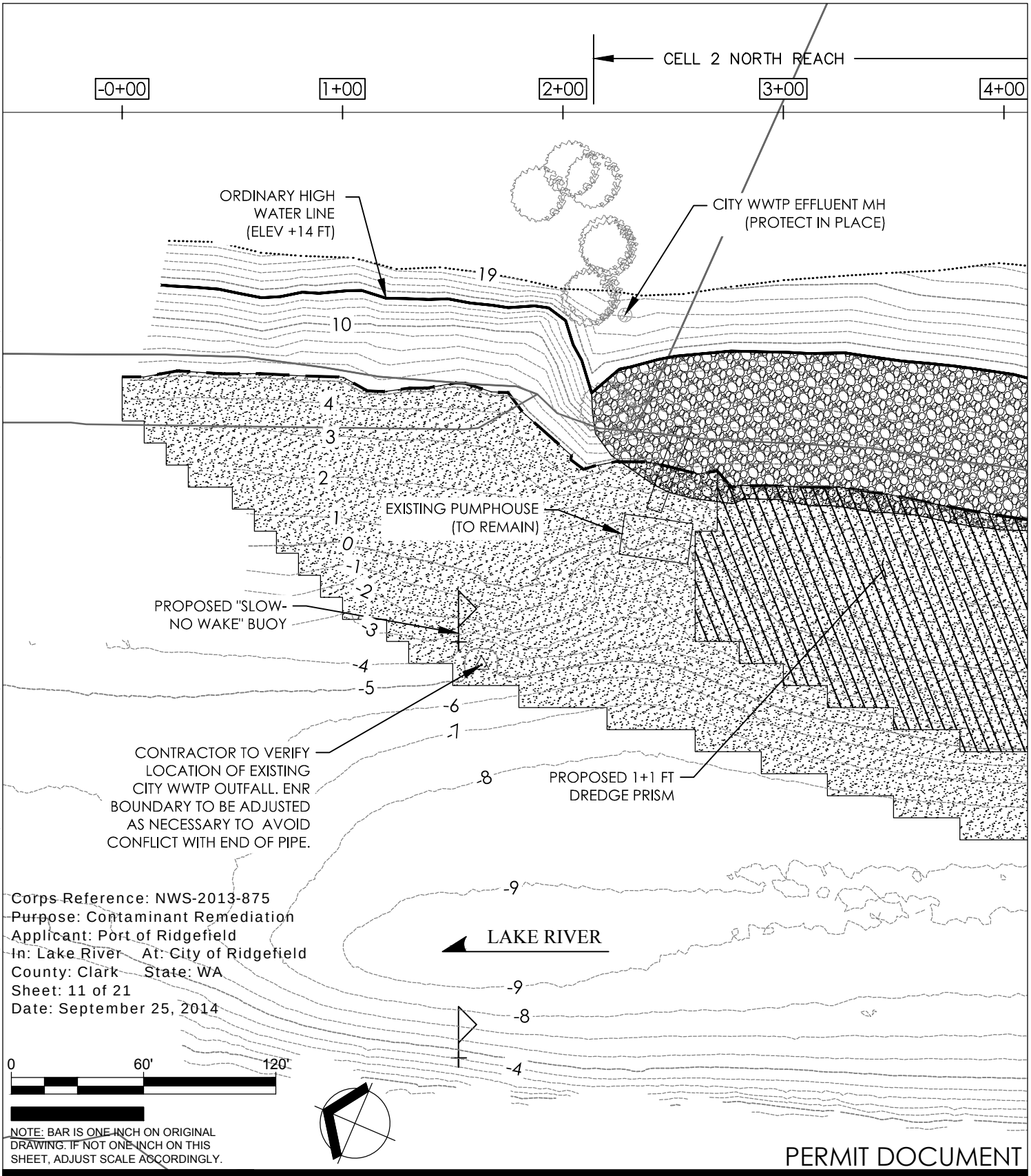
REMEDY OVERVIEW

LAKE RIVER REMEDIAL ACTION

PORT OF RIDGEFIELD
RIDGEFIELD, WA

REFERENCE #: NWS-2013-875

SHEET
C9



Corps Reference: NWS-2013-875
Purpose: Contaminant Remediation
Applicant: Port of Ridgefield
In: Lake River At: City of Ridgefield
County: Clark State: WA
Sheet: 11 of 21
Date: September 25, 2014

0 60' 120'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

PERMIT DOCUMENT

MFA JOB #:	9003.01.40
ISSUE DATE:	~~XXXXXXX~~ 7/24/2013
CHECKED:	E. BAKKOM
DRAWN:	J. FAUST

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

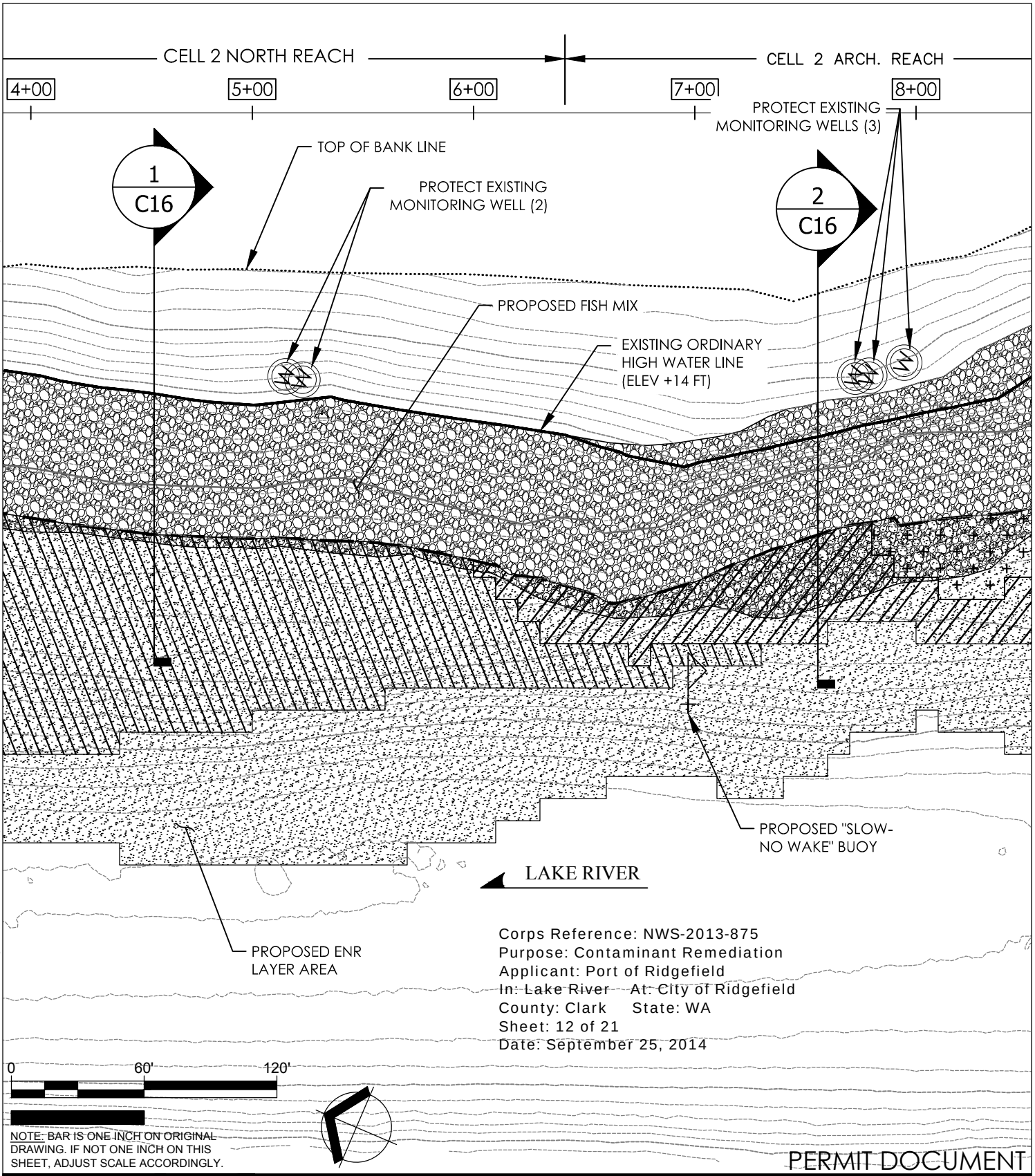
REMEDY PLAN

LAKE RIVER REMEDIAL ACTION

PORT OF RIDGEFIELD
RIDGEFIELD, WA

REFERENCE #: NWS-2013-875

SHEET
C10



PERMIT DOCUMENT

Filepath: g:\00_mfa civil 3d\00_projects\9003.01.40 - port of ridgefield\lake river initial design\PLANS\acoe-8.5x11\C1.1 Enlarged Remedy Plan (ACOE).dwg

Printed by: Jacob Faust

Date: 9/20/2013 12:41:13 PM

MFA JOB #:	9003.01.40
ISSUE DATE:	~~7/24/2013~~ XXXXXX
CHECKED:	E. BAKKOM
DRAWN:	J. FAUST

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

REMEDY PLAN

LAKE RIVER REMEDIAL ACTION

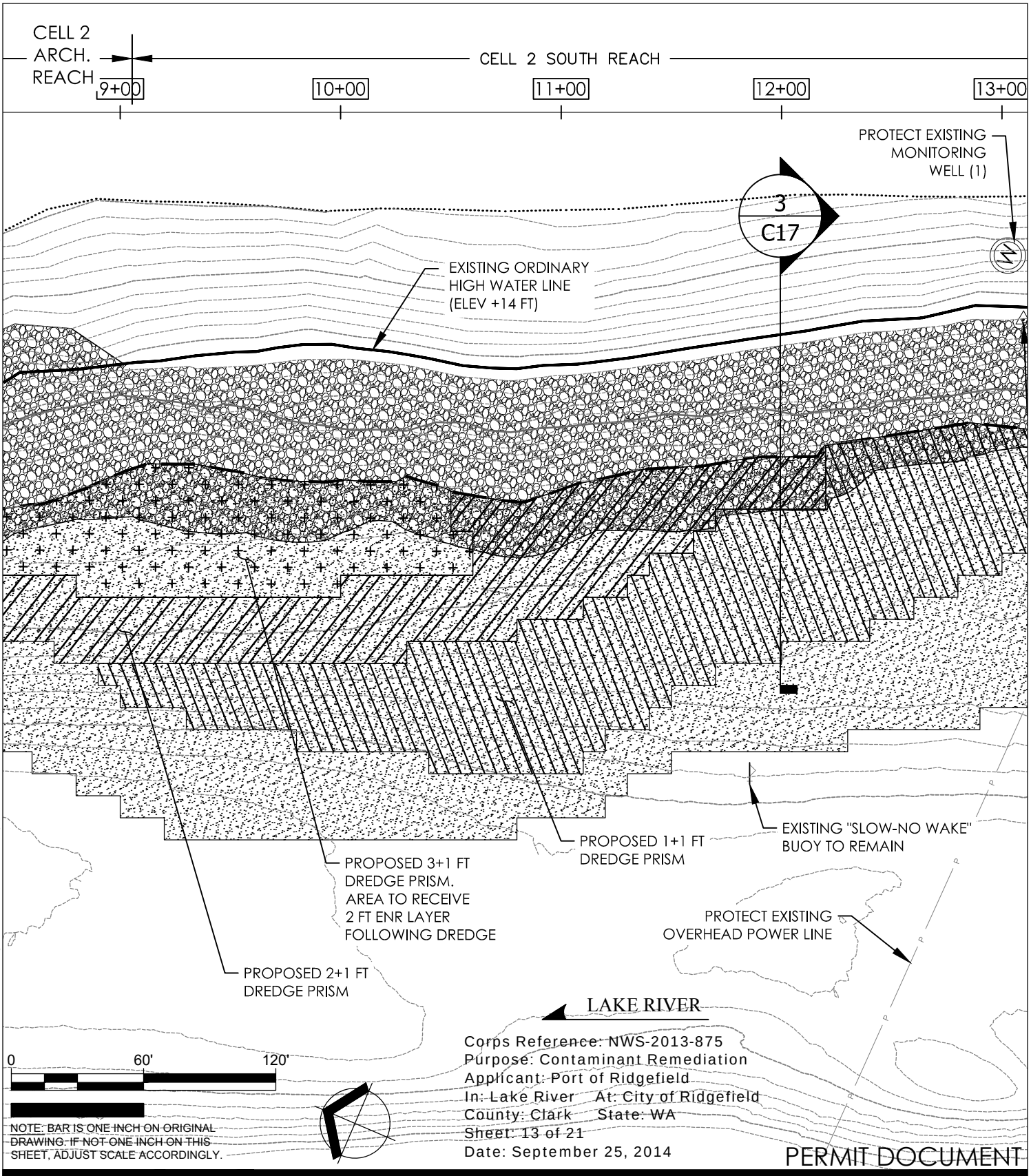
PORT OF RIDGEFIELD

RIDGEFIELD, WA

REFERENCE #: NWS-2013-875

SHEET

C11



Corps Reference: NWS-2013-875
Purpose: Contaminant Remediation
Applicant: Port of Ridgefield
In: Lake River At: City of Ridgefield
County: Clark State: WA
Sheet: 13 of 21
Date: September 25, 2014

PERMIT DOCUMENT

Filepath: g:\00_mfa civil 3d\00_projects\9003.01.40 - port of ridgefield\lake river initial design\PLANS\acoe-8.5x11\C1.1 Enlarged Remedy Plan (ACOE).dwg

Printed by: Jacob Faust

Date: 9/20/2013 12:41:15 PM

MFA JOB #:	9003.01.40
ISSUE DATE:	~~7/24/2013~~ XXXXXX
CHECKED:	E. BAKKOM
DRAWN:	J. FAUST

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

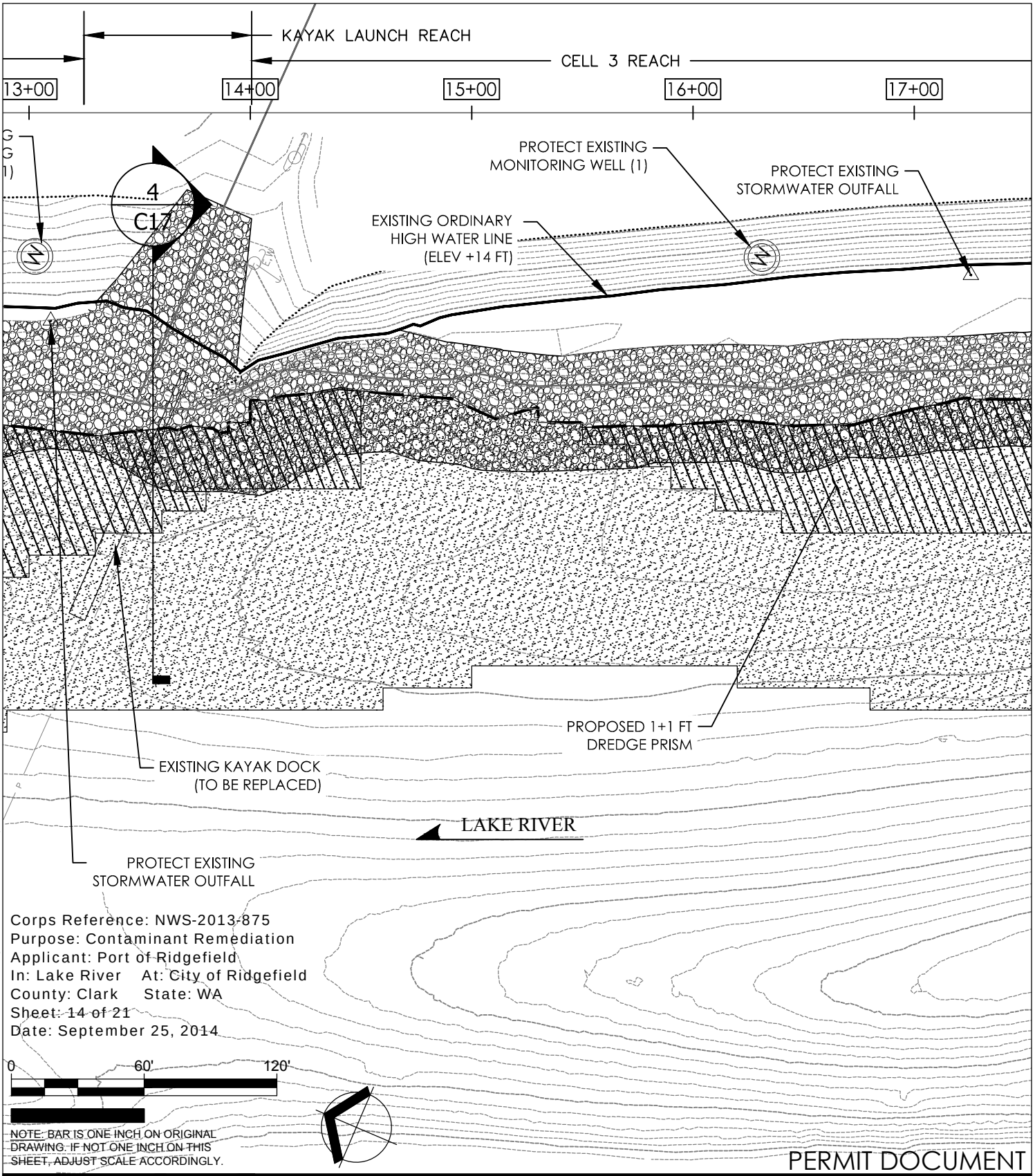
REMEDY PLAN

LAKE RIVER REMEDIAL ACTION

PORT OF RIDGEFIELD
RIDGEFIELD, WA

REFERENCE #:
NWS-2013-875

SHEET
C12



Corps Reference: NWS-2013-875
Purpose: Contaminant Remediation
Applicant: Port of Ridgefield
In: Lake River At: City of Ridgefield
County: Clark State: WA
Sheet: 14 of 21
Date: September 25, 2014

0 60' 120'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

PERMIT DOCUMENT

Filepath: g:\00_mfa civil 3d\00_projects\9003.01.40 - port of ridgefield\lake river initial design\PLANS\acoe-8.5x11\C1.1 Enlarged Remedy Plan (ACOE).dwg
Printed by: Jacob Faust
Date: 9/20/2013 12:41:18 PM

MFA JOB #:	9003.01.40
ISSUE DATE:	~~7/24/2013~~ XXXXXXXX
CHECKED:	E. BAKKOM
DRAWN:	J. FAUST

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

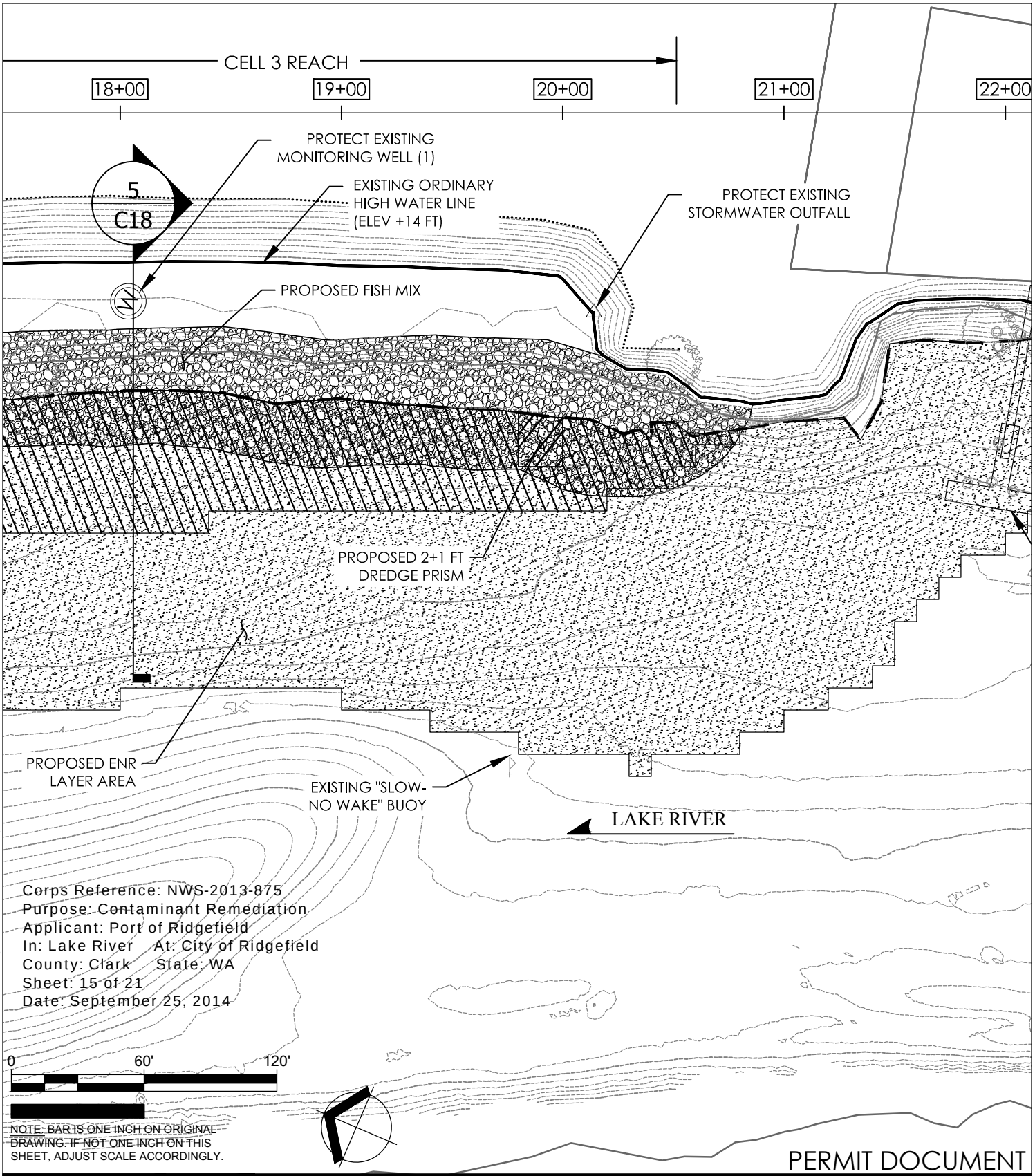
REMEDY PLAN

LAKE RIVER REMEDIAL ACTION

PORT OF RIDGEFIELD
RIDGEFIELD, WA

REFERENCE #:
NWS-2013-875

SHEET
C13



PERMIT DOCUMENT

Filepath: g:\00_mfa civil 3d\00_projects\9003.01.40 - port of ridgefield\lake river initial design\PLANS\acoe-8.5x11\C1.1 Enlarged Remedy Plan (ACOE).dwg

Printed by: Jacob Faust

Date: 9/20/2013 12:41:20 PM

MFA JOB #:	9003.01.40
ISSUE DATE:	~~XXXXXXX~~ 7/24/2013
CHECKED:	E. BAKKOM
DRAWN:	J. FAUST

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

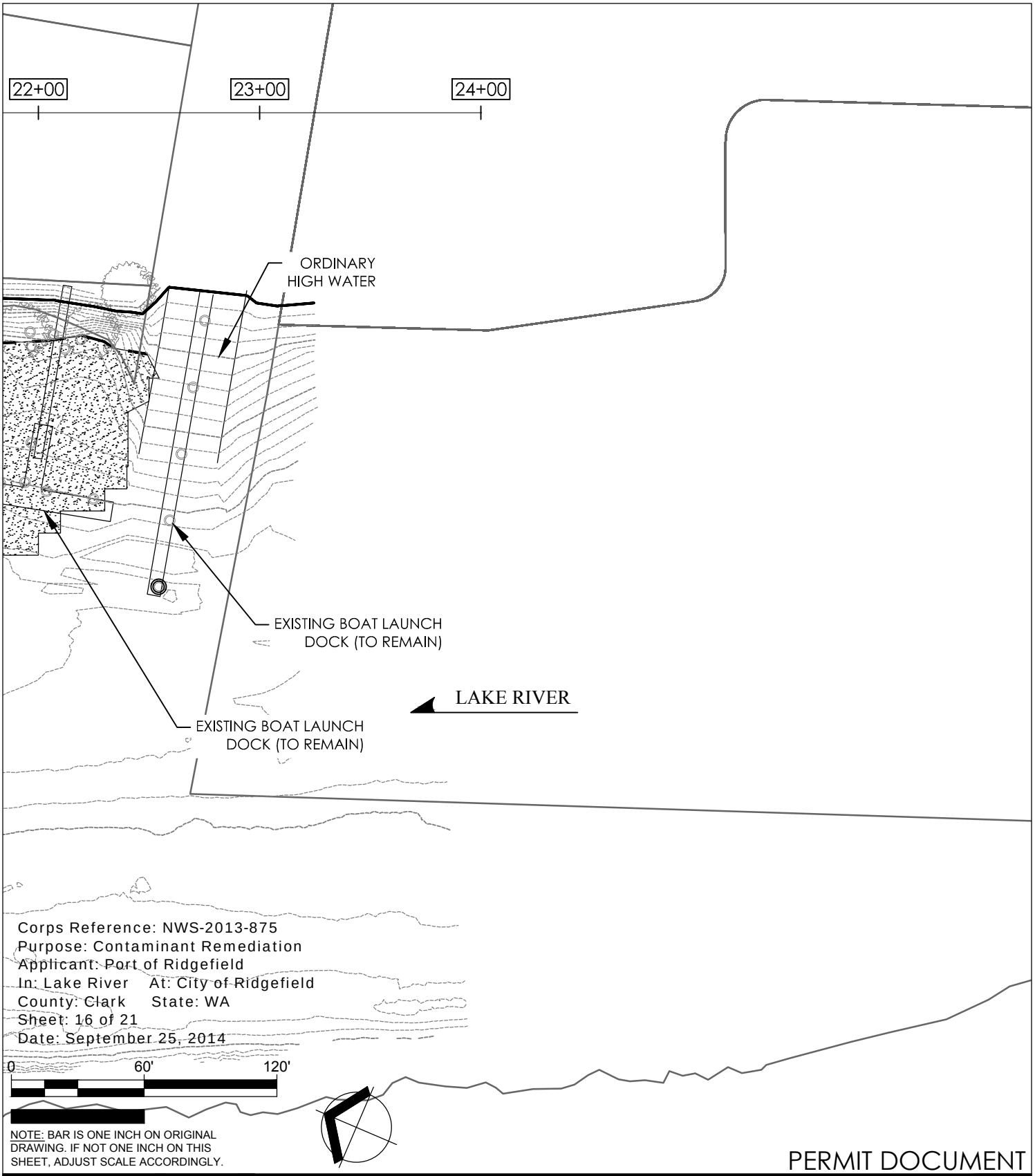
REMEDY PLAN

LAKE RIVER REMEDIAL ACTION

PORT OF RIDGEFIELD
RIDGEFIELD, WA

REFERENCE #: NWS-2013-875

SHEET
C14



Corps Reference: NWS-2013-875
Purpose: Contaminant Remediation
Applicant: Port of Ridgefield
In: Lake River At: City of Ridgefield
County: Clark State: WA
Sheet: 16 of 21
Date: September 25, 2014

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

PERMIT DOCUMENT

Filepath: g:\00_mfa civil 3d\00_projects\9003.01.40 - port of ridgefield\lake river initial design\PLANS\acoe-8.5x11\C1.1 Enlarged Remedy Plan (ACOE).dwg
Printed by: Jacob Faust
Date: 9/20/2013 12:41:23 PM

MFA JOB #:	9003.01.40
ISSUE DATE:	~~XXXXXXX~~
CHECKED:	E. BAKKOM
DRAWN:	J. FAUST

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

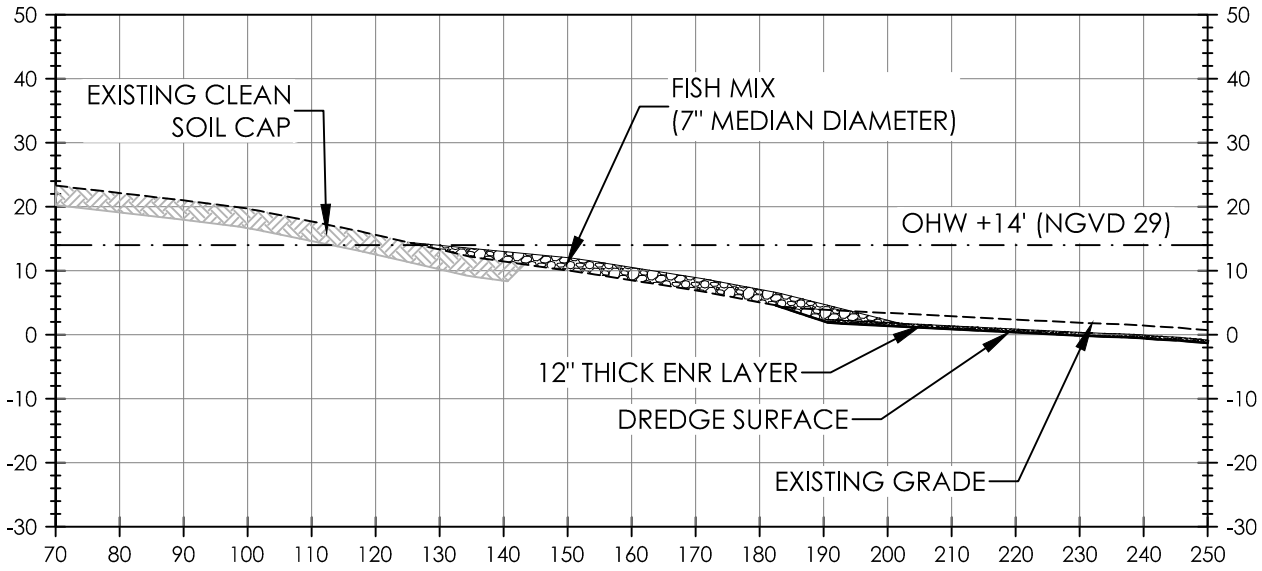
REMEDY PLAN

LAKE RIVER REMEDIAL ACTION

PORT OF RIDGEFIELD
RIDGEFIELD, WA

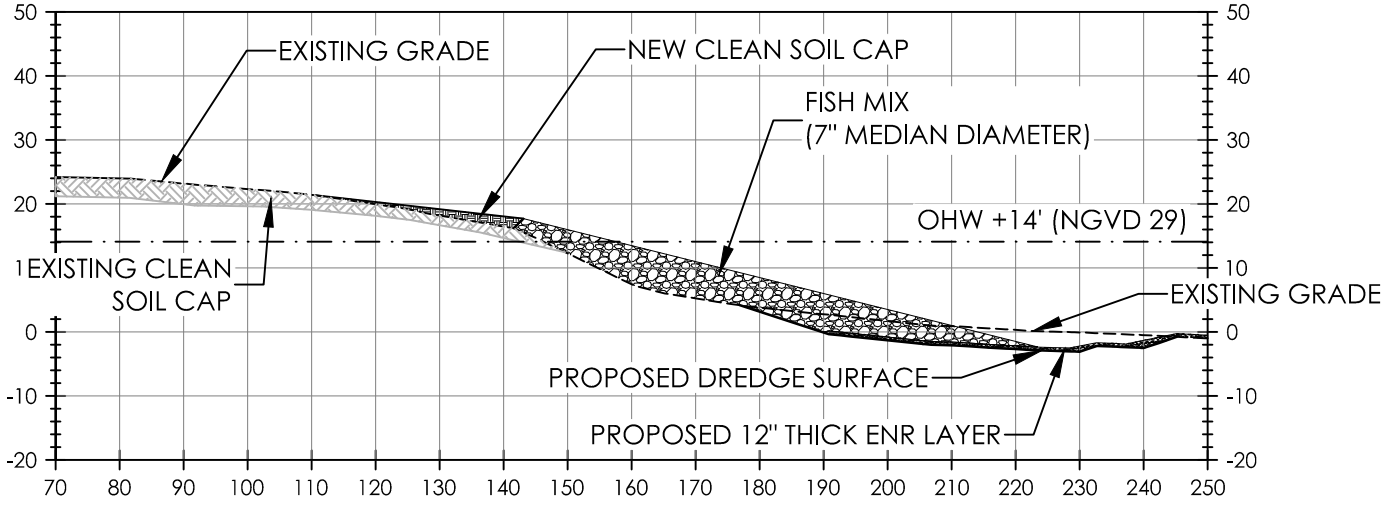
REFERENCE #: NWS-2013-875

SHEET
C15



1 / C11 TYPICAL SECTION 1 - CELL 2 NORTH REACH

SCALE: 1" = 30' H
1" = 30' V



2 / C11 TYPICAL SECTION 2 - CELL 2 ARCHAEOLOGICAL REACH

SCALE: 1" = 30' H
1" = 30' V

Corps Reference: NWS-2013-875
Purpose: Contaminant Remediation
Applicant: Port of Ridgefield
In: Lake River At: City of Ridgefield
County: Clark State: WA
Sheet: 17 of 21
Date: September 25, 2014

PERMIT DOCUMENT

MFA JOB #:	9003.01.40
ISSUE DATE:	~~XX/XX/XX~~ 7/24/2013
CHECKED:	E. BAKKOM
DRAWN:	J. FAUST

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

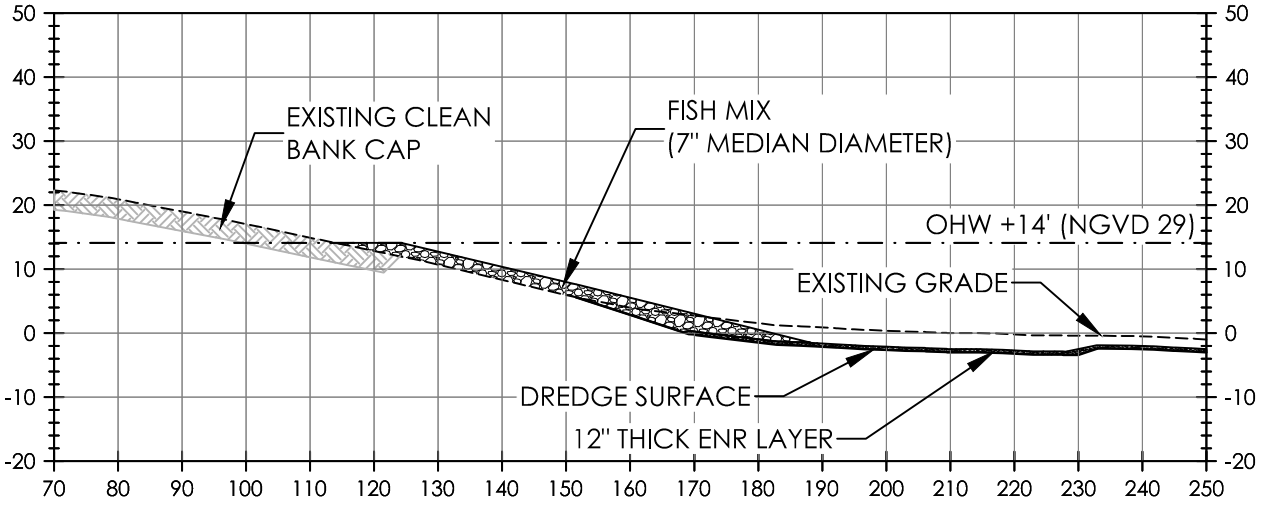
TYPICAL SECTIONS 1 & 2

LAKE RIVER REMEDIAL ACTION

PORT OF RIDGEFIELD
RIDGEFIELD, WA

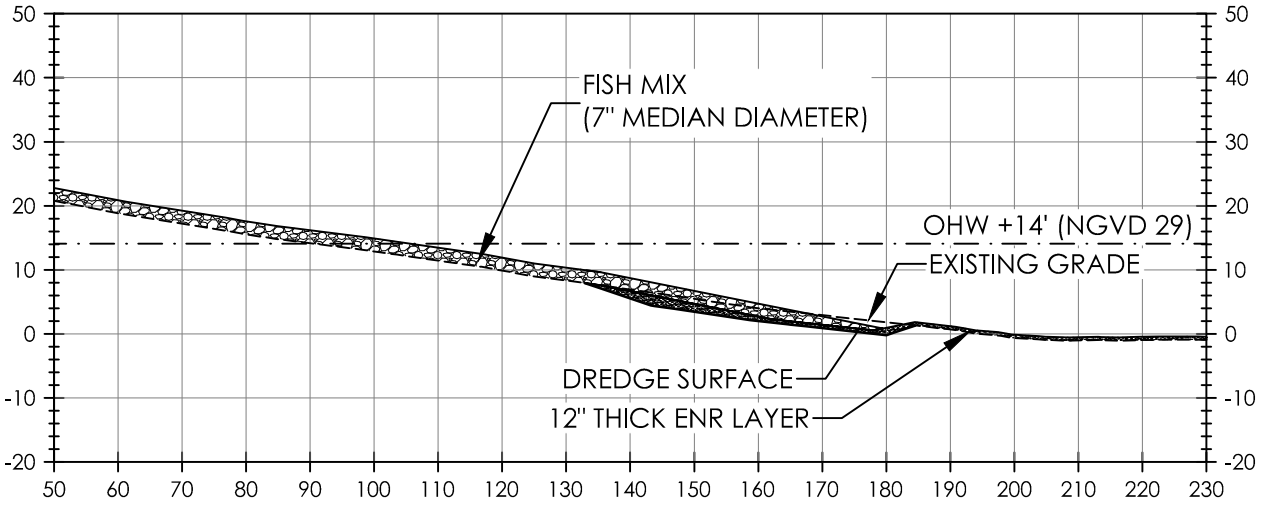
REFERENCE #: NWS-2013-875

SHEET
C16



3 / C12 TYPICAL SECTION 3 - CELL 2 SOUTH REACH

SCALE: 1" = 30' H
1" = 30' V



4 / C13 TYPICAL SECTION 4 - KAYAK LAUNCH REACH

SCALE: 1" = 30' H
1" = 30' V

Corps Reference: NWS-2013-875
Purpose: Contaminant Remediation
Applicant: Port of Ridgefield
In: Lake River At: City of Ridgefield
County: Clark State: WA
Sheet: 18 of 21
Date: September 25, 2014

PERMIT DOCUMENT

MFA JOB #:	9003.01.40
ISSUE DATE:	~~XX/XX/XXXX~~ 7/24/2013
CHECKED:	E. BAKKOM
DRAWN:	J. FAUST

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

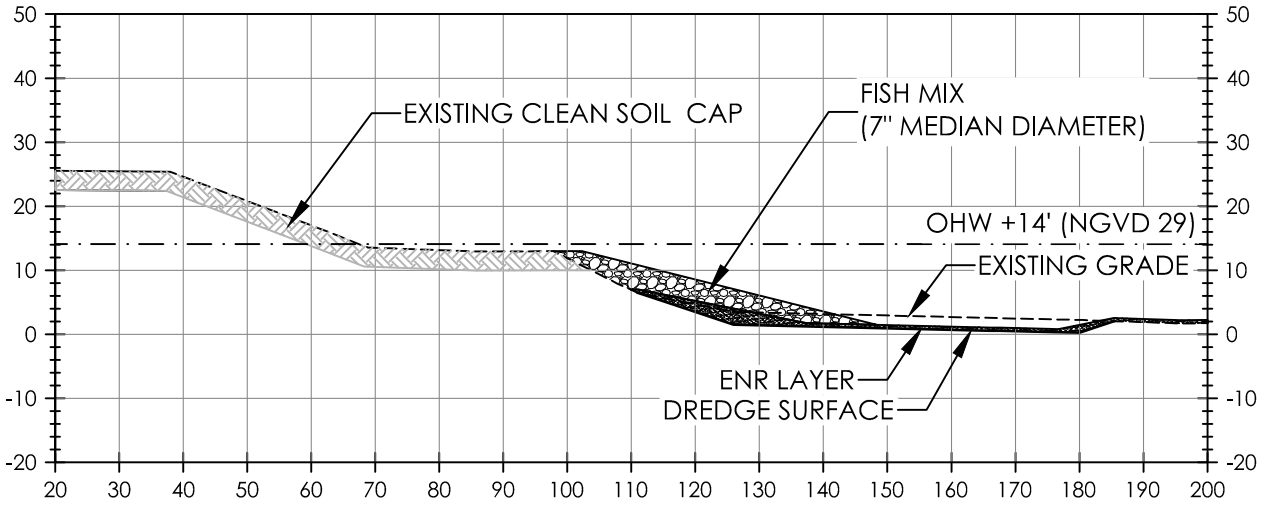
TYPICAL SECTIONS 3 & 4

LAKE RIVER REMEDIAL ACTION

PORT OF RIDGEFIELD
RIDGEFIELD, WA

REFERENCE #: NWS-2013-875

SHEET
C17



5
C14

TYPICAL SECTION 5 - CELL 3 REACH

SCALE: 1" = 30' H
1" = 30' V

Corps Reference: NWS-2013-875
Purpose: Contaminant Remediation
Applicant: Port of Ridgefield
In: Lake River At: City of Ridgefield
County: Clark State: WA
Sheet: 19 of 21
Date: September 25, 2014

PERMIT DOCUMENT

MFA JOB #:	9003.01.40
ISSUE DATE:	~~XX/XX/X~~ 7/24/2013
CHECKED:	E. BAKKOM
DRAWN:	J. FAUST

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

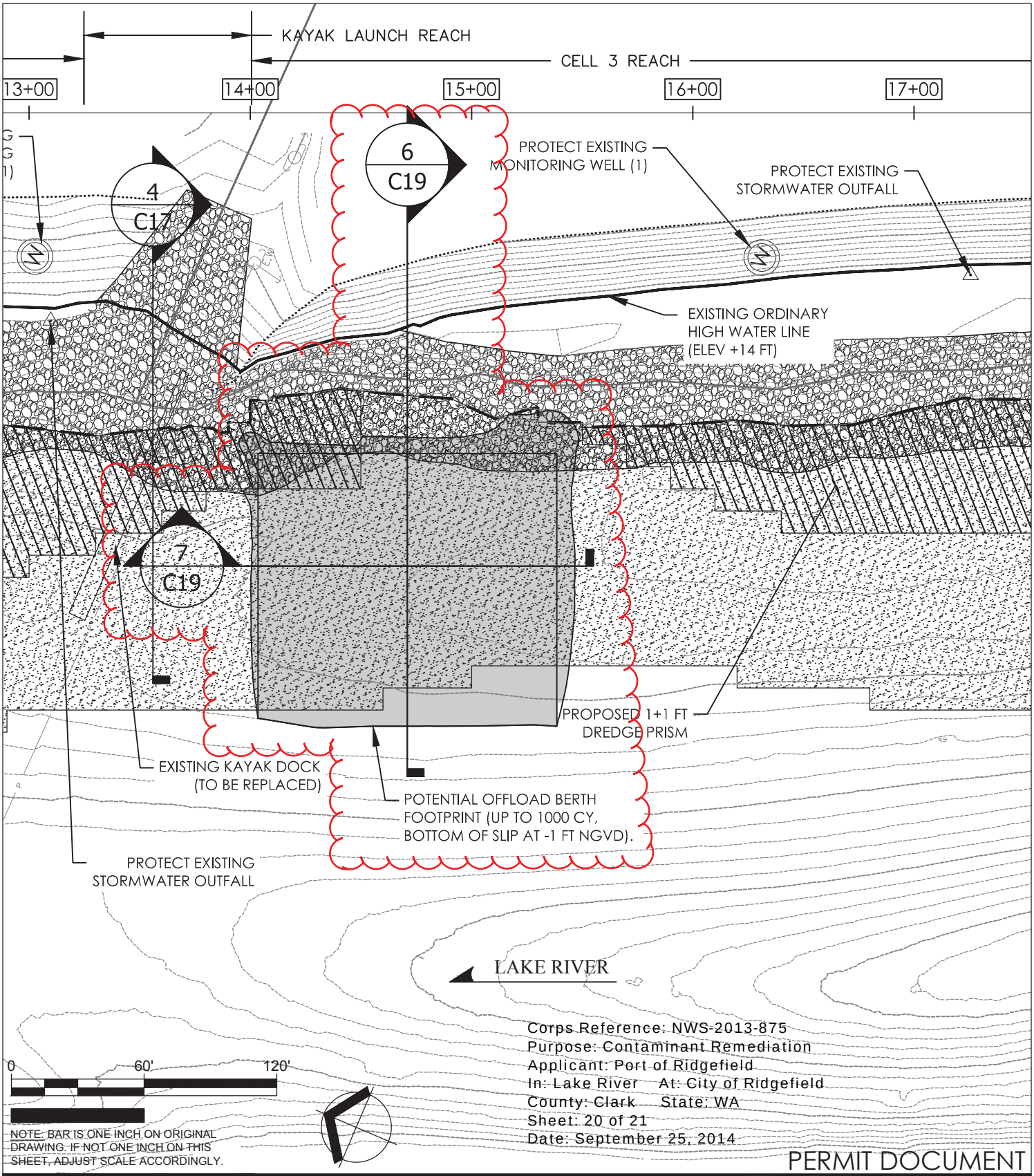
TYPICAL SECTION 5

LAKE RIVER REMEDIAL ACTION

PORT OF RIDGEFIELD
RIDGEFIELD, WA

REFERENCE #:
NWS-2013-875

SHEET
C18



NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

Corps Reference: NWS-2013-875
Purpose: Contaminant Remediation
Applicant: Port of Ridgefield
In: Lake River At: City of Ridgefield
County: Clark State: WA
Sheet: 20 of 21
Date: September 25, 2014

PERMIT DOCUMENT

Filepath: G:\00_MFA Civil 3D\00_PROJECTS\9003.01.40 - Port of Ridgefield\Lake River Initial Design\PLANS\ACOE-8.5x11\C13 Enlarged Remedy Plan (ACOE) - Revised 04.08.2014.dwg

Printed by: Josh Elliott

Date: 4/9/2014 9:32:51 AM

MFA JOB #:	9003.01.40
ISSUE DATE:	~~XX/XX/XX~~ 04/09/2014
CHECKED:	E. BAKKOM
DRAWN:	J. FAUST

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

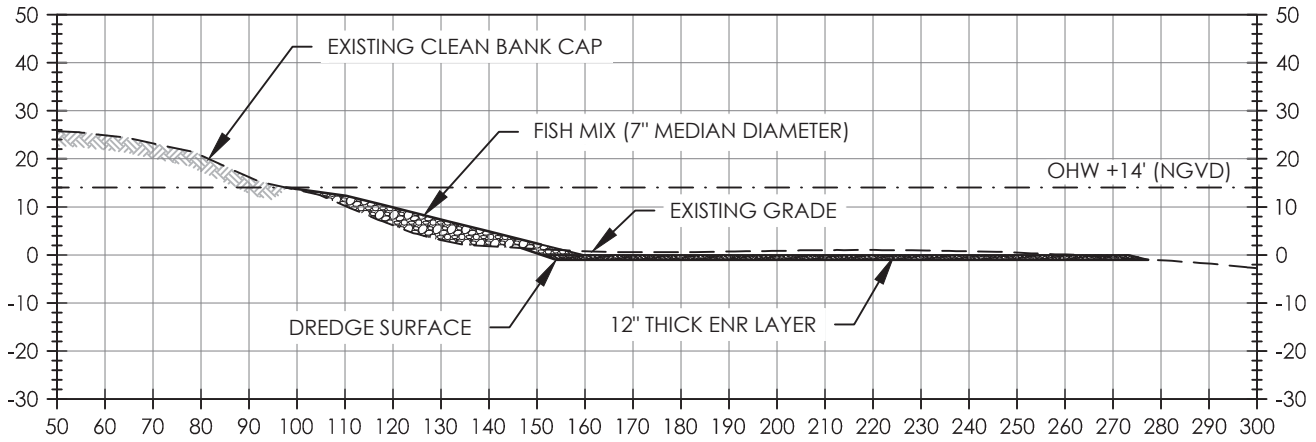
REMEDY PLAN

LAKE RIVER REMEDIAL ACTION

PORT OF RIDGEFIELD
RIDGEFIELD, WA

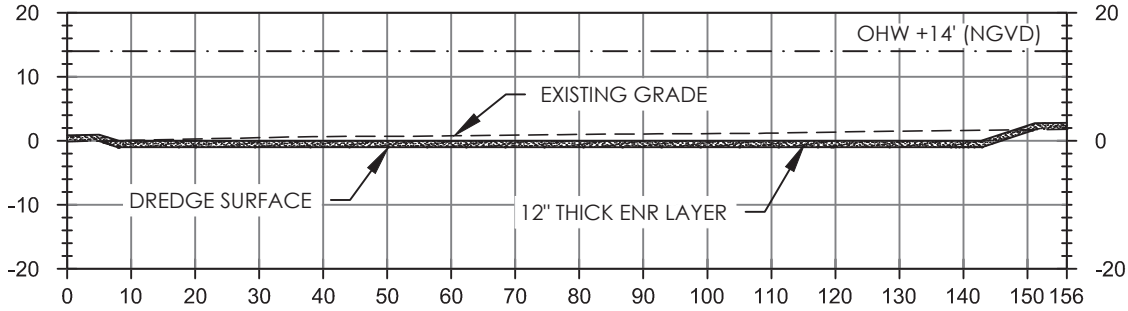
REFERENCE #:
NWS-2013-875

SHEET
C13



6 / C13 TYPICAL SECTION 6 - POTENTIAL BARGE SLIP

SCALE: 1" = 40' H
1" = 40' V



7 / C13 SECTION 7 - POTENTIAL BARGE SLIP

SCALE: 1" = 30' H
1" = 30' V

Corps Reference: NWS-2013-875
Purpose: Contaminant Remediation
Applicant: Port of Ridgefield
In: Lake River At: City of Ridgefield
County: Clark State: WA
Sheet: 21 of 21
Date: September 25, 2014

PERMIT DOCUMENT

MFA JOB #:	9003.01.40
ISSUE DATE:	04/09/2014
CHECKED:	E. BAKKOM
DRAWN:	J. ELLIOTT

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 (p) 360.906.1958 (f)
www.maulfoster.com

SECTIONS 6 & 7

LAKE RIVER SEDIMENT REMEDIATION

PORT OF RIDGEFIELD
RIDGEFIELD, WA

REFERENCE #: NWP-2012-401 (1)

SHEET
C19

US Army Corps of Engineers ®
Seattle District

NATIONWIDE PERMIT 38
Terms and Conditions

Effective Date: June 15, 2012

In addition to any special condition that may be required on a case-by-case basis by the District Engineer, the following terms and conditions must be met, as applicable, for a Nationwide Permit authorization to be valid in Washington State.

A. DESCRIPTION OF AUTHORIZED ACTIVITIES

38. Cleanup of Hazardous and Toxic Waste. Specific activities required to effect the containment, stabilization, or removal of hazardous or toxic waste materials that are performed, ordered, or sponsored by a government agency with established legal or regulatory authority. Court ordered remedial action plans or related settlements are also authorized by this NWP. This NWP does not authorize the establishment of new disposal sites or the expansion of existing sites used for the disposal of hazardous or toxic waste.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 31.) (Sections 10 and 404)

Note: Activities undertaken entirely on a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site by authority of CERCLA as approved or required by EPA, are not required to obtain permits under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act.

B. CORPS NATIONAL GENERAL CONDITIONS FOR ALL NWPs

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR § 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR § 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will

notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, The Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.noaa.gov/fisheries.html respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for obtaining any "take" permits required under the U.S. Fish and Wildlife Service's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such "take" permits are required for a particular activity.

20. Historic Properties. (a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed

activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties on which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provides a project-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332. (1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in minimal adverse effects on the aquatic environment. (2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered. (3) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) – (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). (4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided. (5) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to establish a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or establishing a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is

best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

_____
(Transferee)

_____
(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include: (a) A statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions; (b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and (c) The signature of the permittee certifying the completion of the work and mitigation.

31. Pre-Construction Notification. (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either: (1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or (2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information: (1) Name, address and telephone numbers of the prospective permittee; (2) Location of the proposed project; (3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans); (4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate; (5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan. (6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and (7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level. (2) For all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of intermittent and ephemeral stream bed, and for all NWP 48 activities that require pre-construction notification, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse effects will be more than

minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5. (3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act. (4) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. For a linear project, this determination will include an evaluation of the individual crossings to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to intermittent or ephemeral streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51 or 52, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in minimal adverse effects. When making minimal effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

2. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan

before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

3. If the district engineer determines that the adverse effects of the proposed work are more than minimal, then the district engineer will notify the applicant either: (a) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the project is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or (c) that the project is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period, with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project.

C. CORPS SEATTLE DISTRICT REGIONAL GENERAL CONDITIONS

1. Aquatic Resources Requiring Special Protection. Activities resulting in a loss of waters of the United States in a mature forested wetland, bog, bog-like wetland, aspen-dominated wetland, alkali wetland, wetlands in a dunal system along the Washington coast, vernal pools, camas prairie wetlands, estuarine wetlands, and wetlands in coastal lagoons cannot be authorized by a NWP, except by the following NWPs:

NWP 3 – Maintenance
NWP 20 – Oil Spill Cleanup
NWP 32 – Completed Enforcement Actions
NWP 38 – Cleanup of Hazardous and Toxic Waste

In order to use one of the above-referenced NWPs in any of the aquatic resources requiring special protection, you must submit a pre-construction notification to the District Engineer in accordance with Nationwide Permit General Condition 31 (Pre-Construction Notification) and obtain written approval before commencing work.

2. Commencement Bay. The following NWPs may not be used to authorize activities located in the Commencement Bay Study Area (see Figure 1 at www.nws.usace.army.mil, select Regulatory Permits then Permit Guidebook, then Nationwide Permits) requiring Department of the Army authorization:

NWP 12 – Utility Line Activities (substations)
NWP 13 – Bank Stabilization
NWP 14 – Linear Transportation Projects
NWP 23 – Approved Categorical Exclusions
NWP 29 – Residential Developments
NWP 39 – Commercial and Institutional Developments
NWP 40 – Agricultural Activities
NWP 41 – Reshaping Existing Drainage Ditches
NWP 42 – Recreational Facilities
NWP 43 – Stormwater Management Facilities

3. New Bank Stabilization Prohibition Areas in Tidal Waters of Puget Sound. Activities involving new bank stabilization in tidal waters in Water Resource Inventory Areas (WRIAs) 8, 9, 10, 11, and 12 (within the specific area identified on Figure 2 at www.nws.usace.army.mil, select Regulatory Permits then Permit Guidebook, then Nationwide Permits) cannot be authorized by a NWP.

4. Bank Stabilization. Any project including new or maintenance bank stabilization activities requires pre-construction notification to the District Engineer in accordance with Nationwide Permit General Condition 31 for Pre-Construction Notification. This requirement does not apply to maintenance work exempt by 33 CFR 323.4 (a)(2). Each notification must also include the following information:

a. Need for the work, including the cause of the erosion and the threat posed to structures, infrastructure, and/or public safety. The notification must also include a justification for the need to place fill or structures waterward of the line of the Corps' jurisdiction (typically, the ordinary high water mark or mean higher high water mark).

b. Current and expected post-project sediment movement and deposition patterns in and near the project area. In tidal waters, describe the location and size of the nearest bluff sediment sources (feeder bluffs) to the project area and current and expected post-project nearshore drift patterns in the project area.

c. Current and expected post-project habitat conditions, including the presence of fish, wildlife and plant species, submerged aquatic vegetation, spawning habitat, and special aquatic sites (e.g., vegetated shallows, riffle and pool complexes, or mudflats) in the project area.

d. In rivers and streams, an assessment of the likely impact of the proposed work on upstream, downstream and cross-stream properties (at a minimum the area assessed should extend from the nearest upstream bend to the nearest downstream bend of the watercourse). Discuss the methodology used for determining effects. The Corps reserves the right to request an increase in the reach assessment area to fully address the relevant ecological reach and associated habitat.

e. For new bank stabilization activities in rivers and streams, describe the type and length of existing bank stabilization within 300 feet up and downstream of the project area. In tidal areas, describe the type and length of existing bank stabilization within 300 feet along the shoreline on both sides of the project area.

f. Demonstrate the proposed project incorporates the least environmentally damaging practicable bank protection methods. These methods include, but are not limited to, the use of bioengineering, biotechnical design, root wads, large woody material, native plantings, and beach nourishment in certain circumstances. If rock must be used due to site erosion conditions, explain how the bank stabilization structure incorporates elements beneficial to fish. If the Corps determines you have not incorporated the least environmentally damaging practicable bank protection methods and/or have not fully compensated for impacts to aquatic resources, you must submit a compensatory mitigation plan to compensate for impacts to aquatic resources.

g. A planting plan using native riparian plant species unless the applicant demonstrates a planting plan is not appropriate or not practicable.

5. Crossings of Waters of the United States. Any project including installing, replacing, or modifying crossings of waters of the United States, such as culverts, requires pre-construction notification to the District Engineer in accordance with Nationwide Permit General Condition 31 for Pre-Construction Notification. This requirement does not apply to maintenance work exempt by 33 CFR 323.4 (a)(2). Each notification must also include the following information:

a. Need for the crossing.

b. Crossing design criteria and design methodology.

c. Rationale behind using the specific design method for the crossing.

6. Cultural Resources and Human Burials. Permittees must immediately stop work and notify the District Engineer within 24 hours if, during the course of conducting authorized work, human burials, cultural resources, or historic properties, as identified by the National Historic Preservation Act, are discovered. Failure to stop work in the area of discovery until the Corps can comply with the provisions of 33 CFR 325 Appendix C, the National Historic Preservation Act, and other pertinent laws and regulations could result in a violation of state and federal laws. Violators are subject to civil and criminal penalties.

7. Essential Fish Habitat. An activity which may adversely affect essential fish habitat, as identified under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), may not be authorized by NWP until essential fish habitat requirements have been met by the applicant and the Corps. Non-federal permittees shall notify the District Engineer if essential fish habitat may be affected by, or is in the vicinity of, a proposed activity and shall not begin work until notified by the District Engineer that the requirements of the essential fish habitat provisions of the MSA have been satisfied and the activity is authorized. The notification must identify the type(s) of essential fish habitat (e.g., Pacific salmon, groundfish, and/or coastal-pelagic species) managed by a Fishery Management Plan that may be affected. Information about essential fish habitat is available at www.nwr.noaa.gov/.

8. Vegetation Protection and Restoration. Permittees must clearly mark all construction area boundaries before beginning work. The removal of native vegetation in riparian areas and wetlands, and the removal of submerged aquatic vegetation in estuarine and tidal areas must be avoided and minimized to the maximum extent practicable. Areas subject to temporary vegetation removal shall be replanted with

appropriate native species by the end of the first planting season following the disturbance except as waived by the District Engineer. If an aquaculture area is permitted to impact submerged aquatic vegetation under NWP 48, the aquaculture area does not need to be replanted with submerged aquatic vegetation.

9. Access. You must allow representatives of this office to inspect the authorized activity at any time deemed necessary to ensure the work is being, or has been, accomplished in accordance with the terms and conditions of your permit.

10. Contractor Notification of Permit Requirements. The permittee must provide a copy of the nationwide permit verification letter, conditions, and permit drawings to all contractors involved with the authorized work, prior to the commencement of any work in waters of the U.S.

D. CORPS REGIONAL SPECIFIC CONDITIONS FOR THIS NWP: NONE

E. STATE 401 CERTIFICATION GENERAL CONDITIONS:

1. **For in-water construction activities**. Individual 401 review is required for projects or activities authorized under NWPs that will cause, or be likely to cause or contribute to an exceedence of a State water quality standard (WAC 173-201A) or sediment management standard (WAC 173-204).

   Note: *State water quality standards are posted on Ecology's website: http://www.ecy.wa.gov/programs/wq/swqs/. Click "Surface Water Criteria" for freshwater and marine water standards. Sediment management standards are posted on Ecology's website: http://www.ecy.wa.gov/biblio/wac173204.html. Information is also available by contacting Ecology's Federal Permit staff.*

2. **Projects or Activities Discharging to Impaired Waters**. Individual 401 review is required for projects or activities authorized under NWPs if the project or activity will occur in a 303(d) listed segment of a waterbody or upstream of a listed segment and may result in further exceedences of the specific listed parameter.

   Note: *To determine if your project or activity is in a 303(d) listed segment of a waterbody, visit Ecology's Water Quality Assessment webpage for maps and search tools, http://www.ecy.wa.gov/programs/wq/303d/2008/. Information is also available by contacting Ecology's Federal Permit staff.*

3. **Notification**. For projects or activities that will require Individual 401 review, applicants must provide Ecology with the same documentation provided to the Corps (as described in Corps Nationwide Permit General Condition 31, Pre-Construction Notification), including, when applicable:

   (a) A description of the project, including site plans, project purpose, direct and indirect adverse environmental effects the project would cause, and any other Department of the Army permits used or intended to be used to authorize any part of the proposed project or any related activity.

   (b) Delineation of special aquatic sites and other waters of the United States. Wetland delineations must be prepared in accordance with the current method required by the Corps and shall include Ecology's Wetland Rating form. Wetland rating forms are subject to review and verification by Ecology staff.

   Note: *Wetland rating forms are available on Ecology's Wetlands website:*

http://www.ecy.wa.gov/programs/sea/wetlands/ratingsystems or by contacting Ecology's Federal Permit staff.

(c) A statement describing how the mitigation requirement will be satisfied. A conceptual or detailed mitigation or restoration plan may be submitted.

Mitigation plans submitted for Ecology review and approval shall be based on the guidance provided in Wetland Mitigation in Washington State, Parts 1 and 2 (Ecology Publications #06-06-011a and #06-06-011b).

(d) Coastal Zone Management Program "Certification of Consistency" Form if the project is located within a coastal county (Clallam, Grays Harbor, Island, Jefferson, King, Kitsap, Mason, Pacific, Pierce, San Juan, Skagit, Snohomish, Thurston, Wahkiakum, and Whatcom counties).

***Note**: CZM Certification of Consistency forms are available on Ecology's Federal Permit website: http://www.ecy.wa.gov/programs/sea/fed-permit/index.html or by contacting Ecology's Federal Permit staff.*

(e) Other applicable requirements of Corps Nationwide Permit General Condition 31, Corps Regional Conditions, or notification conditions of the applicable NWP.

***Note**: Ecology has 180 days from receipt of applicable documents noted above **and** a copy of the final authorization letter from the Corps providing coverage for a proposed project or activity under the NWP Program to issue a WQC and CZM consistency determination response. If more than 180 days pass after Ecology's receipt of these documents, your requirement to obtain an individual WQC and CZM consistency determination response becomes waived.*

4. **Aquatic resources requiring special protection**. Certain aquatic resources are unique, difficult-to-replace components of the aquatic environment in Washington State. Activities that would affect these resources must be avoided to the greatest extent possible. Compensating for adverse impacts to high value aquatic resources is typically difficult, prohibitively expensive, and may not be possible in some landscape settings.

Individual 401 review is required for activities in or affecting the following aquatic resources (and not prohibited by Regional Condition 1):

(a) Wetlands with special characteristics (as defined in the Washington State Wetland Rating Systems for western and eastern Washington, Ecology Publications #04-06-025 and #04-06-015):

- Estuarine wetlands
- Natural Heritage wetlands
- Bogs
- Old-growth and mature forested wetlands
- Wetlands in coastal lagoons
- Interdunal wetlands
- Vernal pools
- Alkali wetlands

(b) Fens, aspen-dominated wetlands, camas prairie wetlands, and marine water with eelgrass (*Zostera marina*) beds (except for NWP 48).

(c) Category 1 wetlands

(d) Category II wetlands with a habitat score ≥ 29 points. This State General Condition does not apply to the following Nationwide Permits:

NWP 20 – Response Operations for Oil and Hazardous Substances
NWP 32 – Completed Enforcement Actions

5. Mitigation. For projects requiring Individual 401 review, adequate compensatory mitigation must be provided for wetland and other water quality-related impacts of projects or activities authorized under the NWP Program.

(a) Mitigation plans submitted for Ecology review and approval shall be based on the guidance provided in Wetland Mitigation in Washington State, Parts 1 and 2 (Ecology Publications #06-06-011a and #06-06-011b) and shall, at a minimum, include the following:

i. A description of the measures taken to avoid and minimize impacts to wetlands and other waters of the U.S.

ii. The nature of the proposed impacts (i.e., acreage of wetlands and functions lost or degraded)

iii. The rationale for the mitigation site that was selected

iv. The goals and objectives of the compensatory mitigation project

v. How the mitigation project will be accomplished, including construction sequencing, best management practices to protect water quality, proposed performance standards for measuring success and the proposed buffer widths

vi. How it will be maintained and monitored to assess progress towards goals and objectives. Monitoring will generally be required for a minimum of five years. For forested and scrub-shrub wetlands, 10 years of monitoring will often be necessary.

vii. How the compensatory mitigation site will be legally protected for the long term.

Refer to Wetland Mitigation in Washington State – Part 2: Developing Mitigation Plans (Ecology Publication #06-06-011b) for guidance on developing mitigation plans.

Ecology encourages the use of alternative mitigation approaches, including advance mitigation and other programmatic approaches such as mitigation banks and programmatic mitigation areas at the local level. If you are interested in proposing use of an alternative mitigation approach, consult with the appropriate Ecology regional staff person. (see http://www.ecy.wa.gov/programs/sea/wetlands/contacts.htm)

Information on the state wetland mitigation banking program is available on Ecology's website: http://www.ecy.wa.gov/programs/sea/wetlands/mitigation/banking/index.html

6. Temporary Fills. Individual 401 review is required for any project or activity with temporary fill in wetlands or other waters of the State for more than 90 days, unless the applicant has received written approval from Ecology.

***Note**: This State General Condition does not apply to projects or activities authorized under NWP 33, Temporary Construction, Access, and Dewatering*

7. **Stormwater discharge pollution prevention**: All projects that involve land disturbance or impervious surfaces must implement prevention or control measures to avoid discharge of pollutants in stormwater runoff to waters of the state. For land disturbances during construction, the permittee must obtain and implement permits where required and follow Ecology's current stormwater manual.

   ***Note**: Stormwater permit information is available at Ecology's Water Quality website: http://www.ecy.wa.gov/programs/wq/stormwater/index.html. Ecology's Stormwater Management and Design Manuals are available at: http://www.ecy.wa.gov/programs/wq/stormwater/municipal/StrmwtrMan.html. Information is also available by contacting Ecology's Federal Permit staff.*

8. **State Certification for PCNs not receiving 45-day response.** In the event the U.S. Army Corps of Engineers does not respond to a complete pre-construction notification within 45 days, the applicant must contact Ecology for Individual 401 review.

F. STATE 401 CERTIFICATION SPECIF**IC CONDITIONS FOR THIS NWP:** Certified subject to conditions. Permittee must meet Ecology 401 General Conditions. Individual 401 review is required for projects or activities authorized under this NWP if:

1. The project or activity involves fill in tidal waters.
2. The project or activity affects ½ acre or more of wetlands.

G. EPA 401 CERTIFICATION GENERAL CONDITIONS:

A. Any activities in the following types of wetlands and waters of the United States will need to apply for an individual 401 certification: Mature forested wetlands, bogs, bog-like wetlands, wetlands in dunal systems along the Washington coast, coastal lagoons, vernal pools, aspen-dominated wetlands, alkali wetlands, camas prairie wetlands, estuarine wetlands, including salt marshes, and marine waters with eelgrass or kelp beds.

B. A 401 certification determination is based on the project or activity meeting established turbidity levels. The EPA will be using as guidance the state of Washington's water quality standards [WAC 173-201a] and sediment quality standards [WAC 173-204]. Projects or activities that are expected to exceed these levels or that do exceed these levels will require an individual 401 certification.

The water quality standards allow for short-term turbidity exceedances after all necessary Best Management Practices have been implemented (e.g., properly placed and maintained filter fences, hay bales and/or other erosion control devices, adequate detention of runoff to prevent turbid water from flowing off-site, providing a vegetated buffer between the activity and open water, etc.), and only up to the following limits:

Wetted Stream Width at Discharge Point	Approximate Downstream Point for Determining Compliance
Up to 30 feet	50 feet
>30 to 100 feet	100 feet
>100 feet to 200 feet	200 feet

>200 feet	300 feet
LAKE, POND, RESERVOIR	Lesser of 100 feet or maximum surface dimension

C. 401 certification of projects and activities under NWPs will use Washington State Department of Ecology's most recent stormwater manual or an EPA approved equivalent manual as guidance in meeting water quality standards.

D. For projects and activities requiring coverage under an NPDES permit, certification is based on compliance with the requirements of that permit. Projects and activities not in compliance with NPDES requirements will require individual 401certification.

E. Individual 401certification is required for projects or activities authorized under NWPs if the project will discharge to a waterbody on the list of impaired waterbodies (the 303(d) List) and the discharge may result in further exceedance of a specific parameter the waterbody is listed for. The EPA shall make this determination on a case-by-case basis.

For projects or activities that will discharge to a 303(d)-listed waterbody that does not have an approved Total Maximum Daily Load (TMDL) or an approved water quality management plan, the applicant must provide documentation for EPA approval showing that the discharge will not result in further exceedance of the listed contaminant or impairment.

For projects or activities that will discharge to a 303(d)-listed waterbody that does not have an approved TMDL, the applicant must provide documentation for EPA approval showing that the discharge is within the limits established in the TMDL. The current list of 303(d)-listed waterbodies in Washington State will be consulted in making this determination and is available on Ecology's web site at: www.ecy.wa.gov/programs/wq/303d/2012/index.html

The EPA may issue 401 certification for projects or activities that would result in further exceedance or impairment if mitigation is provided that would result in a net decrease in listed contaminants or less impairment in the waterbody. This determination would be made during individual 401 certification review.

F. For projects requiring individual 401 certification, applicants must provide the EPA with the same documentation provided to the Corps, (as described in Corps' National General Condition 31, Pre-Construction Notification), including, when applicable:

(a) A description of the project, including site plans, project purpose, direct and indirect adverse environmental effects the project would cause, any other U.S. Department of the Army permits used or intended to use to authorize any part of the proposed project or any related activity.

(b) Delineation of special aquatic sites and other waters of the United States. Wetland delineations must be prepared in accordance with the current method required by the Corps.

(c) A statement describing how the mitigation requirement will be satisfied. A conceptual or detailed mitigation or restoration plan may be submitted.

(d) Other applicable requirements of Corps National General Condition 31, Corps Regional Conditions, or notification conditions of the applicable NWP.

A request for individual 401 certification- review is not complete until the EPA receives the applicable documents noted above and the EPA has received a copy of the final authorization letter from the Corps providing coverage for a proposed project or activity under the NWP Program.

G. No activity, including structures and work in navigable waters of the United States or discharges of dredged or fill material, may consist of unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.) and material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

H. An individual 401 certification is based on adequate compensatory mitigation being provided for aquatic resource and other water quality-related impacts of projects or activities authorized under the NWP Program.

A 401 certification is contingent upon written approval from the EPA of the compensatory mitigation plan for projects and activities resulting in any of the following:

- impacts to any aquatic resources requiring special protection (as defined in EPA General Condition A or Corps General Regional Condition 1)
- any impacts to tidal waters or non-tidal waters adjacent to tidal waters (applies to NWP 14)
- Or, any impacts to aquatic resources greater than ¼ acre.

Compensatory mitigation plans submitted to the EPA shall be based on the Joint Agency guidance provided in *Wetland Mitigation in Washington State, Parts 1 and 2* (Ecology Publication #06-06-011a and #06-06-011b) and shall, at a minimum, include the following:

(1) A description of the measures taken to avoid and minimize impacts to wetlands and other waters of the U.S.
(2) The nature of the proposed impacts (i.e., acreage of wetlands and functions lost or degraded)
(3) The rationale for the mitigation site that was selected
(4) The goals and objectives of the compensatory mitigation project
(5) How the mitigation project will be accomplished, including proposed performance standards for measuring success (including meeting planting success standard of 80 percent survival after five years), evidence for hydrology at the mitigation site, and the proposed buffer widths;
(6) How it will be maintained and monitored to assess progress towards goals and objectives.
(7) Completion and submittal of an "as-built conditions report" upon completion of grading, planting and hydrology establishment at the mitigation site;
(8) Completion and submittal of monitoring reports at years 3 and 5 showing the results of monitoring for hydrology, vegetation types, and aerial cover of vegetation.
(9) For forested and scrub-shrub wetlands, 10 years of monitoring will often be necessary.
(10) Documentation of legal site protection mechanism (covenant or deed restriction) to show how the compensatory mitigation site will be legally protected for the long-term.

I. An individual 401 certification is required for any activity where temporary fill will remain in wetlands or other waterbodies for more than 90 days. The 90 day period begins when filling activity starts in the wetland or other waterbody.

J. An individual 401 is required for any proposed project or activity in waterbodies on the most current list of the following Designated Critical Resource Waters (per Corps General Condition 22).

K. An individual 401 certification is required for any proposed project that would increase permanent, above-grade fill within the 100-year floodplain (including the floodway and the flood fringe).

> [***Note:*** The 100-year floodplain is defined as those areas identified as Zones A, A1-30, AE, AH, AO, A99, V, V1-30, and VE on the most current Federal Emergency Management Agency Flood Rate Insurance Maps, or areas identified as within the 100-year floodplain on applicable local Flood Management Program maps. The 100-year flood is also known as the flood with a 100-year recurrence interval, or as the flood with an exceedance probability of 0.01.]

H. EPA 401 CERTIFICATION SPECIFIC CONDITIONS FOR THIS NWP: Partially denied without prejudice. Permittee must meet EPA 401 General Conditions. Individual 401 review is required for projects authorized under this NWP if the project or activities are not part of an EPA ordered cleanup.

I. COASTAL ZONE MANAGEMENT CONSISTENCY RESPONSE FOR THIS NWP: Concur subject to the following condition: When individual 401 review by Ecology is triggered, a CZM Certification of Consistency form must be submitted for projects located within the 15 coastal counties (see State General 401 Condition 3 (Notification)).

US Army Corps of Engineers ®
Seattle District

CERTIFICATE OF COMPLIANCE WITH DEPARTMENT OF THE ARMY PERMIT

Permit Number: NWS-_____

Name of Permittee: _____

Date of Issuance: _____

Upon completion of the activity authorized by this permit, please check the applicable boxes below, date and sign this certification, and return it to the following address:

Department of the Army
U.S. Army Corps of Engineers
Seattle District, Regulatory Branch
Post Office Box 3755
Seattle, Washington 98124-3755

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with the terms and conditions of your authorization, your permit may be subject to suspension, modification, or revocation.

☐	The work authorized by the above-referenced permit has been completed in accordance with the terms and conditions of this permit. Date work complete: _____
	☐ Photographs and as-built drawings of the authorized work (OPTIONAL, unless required as a Special Condition of the permit).

☐	If applicable, the mitigation required (e.g., construction and plantings) in the above-referenced permit has been completed in accordance with the terms and conditions of this permit (not including future monitoring). Date work complete: _____
	☐ Photographs and as-built drawings of the mitigation (OPTIONAL, unless required as a Special Condition of the permit).

Printed Name: _____

Signature: _____

Date: _____

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

January 7, 2015

Regulatory Branch

Mr. Brent Grening
Port of Ridgefield
Post Office Box 55
Ridgefield, Washington 98642

Reference: NWS-2013-875
Port of Ridgefield
(Lake River Remedial Action)

Dear Mr. Grening:

On December 1, 2014, your agent requested a work window time extension for the above-referenced Nationwide Permit (NWP) 38 verification issued to you on September 25, 2014. The work authorized was to dredge up to 14,000 cubic yards of contaminated sediment from 3.25 acres, place up to 26,000 cubic yards of sand and rock fill, and remove up to 100 existing piles and a 1,010 square foot float and gangway, to remediate contaminated sediments in Lake River, near the City of Ridgefield, Clark County, Washington. You requested a permit modification to extend the work window through February 7, to allow additional time for placement of fill below the ordinary high water mark.

We have reviewed your request and verified that this NWP still authorizes this project provided you ensure that the work is performed in accordance with the modified special condition listed below:

> e. In order to meet the requirements of the Endangered Species Act and for the protection of listed Columbia River Chinook, steelhead, coho, chum, bull trout, and eulachon, the permittee may conduct the authorized activities from October 1 through February 7 in any year this permit is valid. The permittee shall not conduct work authorized by this permit from February 8 through September 30 in any year this permit is valid.

This NWP verification supersedes the verification authorized by this office on September 25, 2014. All other terms and conditions contained in the original NWP verification remain in full force and effect. Our verification of this NWP authorization is valid until March 18, 2017, unless the NWP is modified, reissued, or revoked prior to that date. If the authorized work has not been completed by that date and you have commenced or are under contract to commence this activity before March 18, 2017, you will have until March 18, 2018, to complete the activity under the enclosed terms and conditions of this NWP. Failure to comply with all terms and conditions of this NWP verification invalidates this authorization and could result in a violation of Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act. You must also obtain all State and local permits that apply to this project.

A copy of this letter will be furnished to Ms. Madi Novak of Maul Foster & Alongi, Inc. at 2001 NW 19th Avenue, Suite 200, Portland, Oregon 97209. If you have any questions, please contact me at Steven.W.Manlow@usace.army.mil or (206) 316-3047.

Sincerely,

Steve Manlow

Steve Manlow, Project Manager
Regulatory Branch

Enclosures

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

January 7, 2015

Regulatory Branch

Mr. Brent Grening
Port of Ridgefield
Post Office Box 55
Ridgefield, Washington 98642

Reference: NWS-2013-875
Port of Ridgefield
(Lake River Remedial Action)

Dear Mr. Grening:

On December 1, 2014, your agent requested a work window time extension for the above-referenced Nationwide Permit (NWP) 38 verification issued to you on September 25, 2014. The work authorized was to dredge up to 14,000 cubic yards of contaminated sediment from 3.25 acres, place up to 26,000 cubic yards of sand and rock fill, and remove up to 100 existing piles and a 1,010 square foot float and gangway, to remediate contaminated sediments in Lake River, near the City of Ridgefield, Clark County, Washington. You requested a permit modification to extend the work window through February 7, to allow additional time for placement of fill below the ordinary high water mark.

We have reviewed your request and verified that this NWP still authorizes this project provided you ensure that the work is performed in accordance with the modified special condition listed below:

> e. In order to meet the requirements of the Endangered Species Act and for the protection of listed Columbia River Chinook, steelhead, coho, chum, bull trout, and eulachon, the permittee may conduct the authorized activities from October 1 through February 7 in any year this permit is valid. The permittee shall not conduct work authorized by this permit from February 8 through September 30 in any year this permit is valid.

This NWP verification supersedes the verification authorized by this office on September 25, 2014. All other terms and conditions contained in the original NWP verification remain in full force and effect. Our verification of this NWP authorization is valid until March 18, 2017, unless the NWP is modified, reissued, or revoked prior to that date. If the authorized work has not been completed by that date and you have commenced or are under contract to commence this activity before March 18, 2017, you will have until March 18, 2018, to complete the activity under the enclosed terms and conditions of this NWP. Failure to comply with all terms and conditions of this NWP verification invalidates this authorization and could result in a violation of Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act. You must also obtain all State and local permits that apply to this project.

A copy of this letter will be furnished to Ms. Madi Novak of Maul Foster & Alongi, Inc. at 2001 NW 19th Avenue, Suite 200, Portland, Oregon 97209. If you have any questions, please contact me at Steven.W.Manlow@usace.army.mil or (206) 316-3047.

Sincerely,

Steve Manlow

Steve Manlow, Project Manager
Regulatory Branch

Enclosures

US Army Corps of Engineers ®
Seattle District

CERTIFICATE OF COMPLIANCE WITH DEPARTMENT OF THE ARMY PERMIT

Permit Number: NWS- 2013-875

Name of Permittee: Brent Grening, Port of Ridgefield

Date of Issuance: 09/25/2014

Upon completion of the activity authorized by this permit, please check the applicable boxes below, date and sign this certification, and return it to the following address:

Department of the Army
U.S. Army Corps of Engineers
Seattle District, Regulatory Branch
Post Office Box 3755
Seattle, Washington 98124-3755

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with the terms and conditions of your authorization, your permit may be subject to suspension, modification, or revocation.

☒	The work authorized by the above-referenced permit has been completed in accordance with the terms and conditions of this permit. Date work complete: 01/28/2015
	☐ Photographs and as-built drawings of the authorized work (OPTIONAL, unless required as a Special Condition of the permit).

☐	If applicable, the mitigation required (e.g., construction and plantings) in the above-referenced permit has been completed in accordance with the terms and conditions of this permit (not including future monitoring). Date work complete: _____
	☐ Photographs and as-built drawings of the mitigation (OPTIONAL, unless required as a Special Condition of the permit).

Printed Name: BRENT A. GRENING

Signature: [signature]

Date: 7/21/15

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

August 11, 2014

Laurie Olin
Port of Ridgefield
111 W Division St
Ridgefield, WA 98642-3834

RE: Coverage under the Construction Stormwater General Permit

Permit number:	**WAR302135**
Site Name:	**Carty Lake & Lake River in Water Sediment Remediation**
Location:	**111 W Division St**
	Ridgefield **County: Clark**
Disturbed Acres:	**8.2**

Dear Ms. Olin:

The Washington State Department of Ecology (Ecology) received your Notice of Intent for coverage under Ecology's Construction Stormwater General Permit (permit). This is your permit coverage letter. Your permit coverage is effective on August 11, 2014. **Please retain this permit coverage letter with your permit (enclosed), stormwater pollution prevention plan (SWPPP), and site log book. These materials are the official record of permit coverage for your site.**

Please take time to read the entire permit and contact Ecology if you have any questions.

Additional Monitoring
Please refer to the enclosed Administrative Order number 10830 for additional monitoring requirements.

Appeal Process
You have a right to appeal coverage under the general permit to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this letter. This appeal is limited to the general permit's applicability or non-applicability to a specific discharger. The appeal process is governed by chapter 43.21B RCW and chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal, you must do the following within 30 days of the date of receipt of this letter:

- File your appeal and a copy of the permit cover page with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and the permit cover page on Ecology in paper form - by mail or in person (see addresses below). E-mail is not accepted.

You must also comply with other applicable requirements in chapter 43.21B RCW and chapter 371-08 WAC.

Address and Location Information:

Street Addresses:	**Mailing Addresses:**
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	Department of Ecology Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board (PCHB) 1111 Israel Road SW, Suite 301 Tumwater, WA 98501	Pollution Control Hearings Board PO Box 40903 Olympia, WA 98504-0903

Electronic Discharge Monitoring Reports (WQWebDMR)
This permit requires that Permittees submit monthly discharge monitoring reports (DMRs) electronically using Ecology's secure online system, WQWebDMR. To sign up for WQWebDMR go to: www.ecy.wa.gov/programs/wq/permits/paris/webdmr.html. If you have questions, contact Tonya Wolfe at (360) 407-7097 (Olympia area), or (800) 633-6193/option 3, or email WQWebPortal@ecy.wa.gov.

Ecology Field Inspector Assistance
If you have questions regarding stormwater management at your construction site, please contact Sheila Pendleton-Orme of Ecology's Vancouver Field Office at sheila.pendleton-orme@ecy.wa.gov, or (360) 690-4787.

Questions or Additional Information
Ecology is committed to providing assistance. Please review our web page at: www.ecy.wa.gov/programs/wq/stormwater/construction/. If you have questions about the construction stormwater general permit, please contact Joyce Smith at joyce.smith@ecy.wa.gov, or (360) 407-6858.

Sincerely,

Bill Moore, P.E., Manager
Program Development Services Section
Water Quality Program

Enclosure

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

August 5, 2014

Ms. Laurie Olin, Director of Operations
Port of Ridgefield
111 W Division
Ridgefield, WA 98642

Order Docket #	10830
Site Location	Construction area is adjacent to the Port of Ridgefield, located at 111 W Division Street, Ridgefield, WA 98642. The project work will be accomplished on the banks of and within Lake River and Carty Lake.

RE: **Administrative Order**

Dear Ms. Olin:

The Department of Ecology (Ecology) has issued the enclosed Administrative Order requiring Port of Ridgefield to comply with:

- Chapter 90.48 Revised Code of Washington (RCW) - Water Pollution Control.
- Chapter 173-201A Washington Administrative Code (WAC) Water Quality Standards for Surface Waters of the State of Washington.
- Permit: National Pollution Discharge Elimination System (NPDES) Construction Stormwater General Permit WAR302135.

If you have questions please contact Carol Serdar at (360) 407-6269 or carol.serdar@ecy.wa.gov

Sincerely,

Richard Doenges
Southwest Region Manager
Water Quality Program

Enclosure: Administrative Order No. 10830

By Certified Mail: 7012 2920 0000 1182 3172

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

IN THE MATTER OF AN ADMINISTRATIVE ORDER	)	ADMINISTRATIVE ORDER DOCKET #10830
AGAINST Port of Ridgefield Laurie Olin	)))	

To: Laurie Olin
Port of Ridgefield
111 West Division Street
Ridgefield, WA 98642-3834

Order Docket #	10830
Site Location	Construction area is adjacent to the Port of Ridgefield, located at 111 W Division Street, Ridgefield, WA 98642. The project work will be accomplished on the banks of and within Lake River and Carty Lake.

The Washington State Department of Ecology (Ecology) has issued this Administrative Order (Order) requiring the Port of Ridgefield to comply with:

- Chapter 90.48 Revised Code of Washington (RCW) – State of Washington Water Pollution Control Act.
- Chapter 173-201A Washington Administrative Code (WAC) – Water Quality Standards for Surface Waters of the State of Washington.
- Permit: National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit WAR302135.

This is an Administrative Order in accordance with General Condition G13 (Additional Monitoring) as set forth in the Construction Stormwater General Permit. RCW 90.48.120(2) RCW authorizes Ecology to issue Administrative Orders to accomplish the purposes of Chapter 90.48 RCW.

ORDER TO COMPLY

Port of Ridgefield is subject to coverage under NPDES Construction Stormwater General Permit WAR302135 for construction activities associated with the construction site known as Carty Lake & Lake River In-Water S&R (MTCA Consent Decree No. 13-2-03830-1). Port of Ridgefield reported that the site contains contaminated groundwater and soil which has the potential to discharge in stormwater and dewatering water due to the proposed construction activity. The Construction Stormwater General Permit does not have water quality sampling or benchmarks for the known contaminants at the construction site: polycyclic aromatic hydrocarbons (PAHs), semi volatile organic compounds (sVOCs), metals, petroleum hydrocarbons, or dioxins. However, the permit requires compliance with the Water Quality Standards for Surface Water of the State of Washington (Water Quality Standards). Gasoline-range and diesel-range hydrocarbons, benzo(a)pyrene, and pentachlorophenol will be sampled to ensure water quality standards are met using the designed flow-through system (see Table 1).

The Order establishes indicator levels for the Carty Lake & Lake River In-Water S&R. Indicator levels express a pollutant concentration used as a threshold, below which a pollutant is considered unlikely to cause a water quality violation, and above which it may. Indicator levels in this Administrative Order

were derived from the Acute Freshwater Toxic Substances Criteria (WAC 173-201A-240) and the laboratory quanitation level.

For these reasons and in accordance with RCW 90.48.120(2) it is ordered that Port of Ridgefield take the following actions. These actions are required at the location known as Carty Lake & Lake River In-Water S&R site, located at the west and southwest area adjacent to the Port of Ridgefield offices, located at 111 W Division Street, Ridgefield, WA 98642. In the event of a permit transfer to another Permittee, compliance with this Administrative Order and the actions listed below is required.

The Port of Ridgefield must take the following actions to remain in compliance with NPDES Permit WAR302135:

1. Port of Ridgefield must submit, for approval by Ecology (Water Quality Program), a Carty Lake Treatment System Plan **and** a Lake River Treatment System Plan detailing the treatment system of contaminated construction stormwater and/or construction stormwater comingled with construction dewatering water prior to discharging to Lake River. The plans must include:
    a. A detailed treatment system plan on how to prevent discharge of contaminated stormwater from all portions of the site with potential and known contamination related to this construction project area;
    b. If a chemical treatment system is to be used, it must be authorized by Ecology prior to use (Contact Doug Howie at 360.407.6444 or doho461@ecy.wa.gov) – supply a copy of the approval with the treatment system plan;
    c. A site map which includes how contaminated dewatering water and contaminated construction stormwater will be conveyed to the treatment system. Map must include BMPs to be utilized to capture the construction stormwater and send to treatment system, location of baker tanks (if included), discharge location for Discharge Monitoring Reports, and locations of other treatment system features.
    d. The Carty Lake Treatment System Plan and Lake River Treatment System Plan must include specific design criteria to be used in each of the treatment systems, include monitoring frequency (pH, turbidity, and other parameters) based on this Administrative Order. These plans must include all contaminated construction stormwater that has been comingled with contaminated dewatering water from Carty Lake or Lake River sediments.

2. A Stormwater Pollution Prevention Plan (SWPPP) with site specific dewatering plan and contaminated materials management plan must be submitted for Water Quality Program approval OR use SWPPP dated July 28, 2014 AND Figures 1-1 and 2-1 through 2-8.

3. After approval of the stormwater management plan, install all pre-treatment and treatment systems prior to any discharge of dewatering water or contaminated construction stormwater to Lake River.

4. Capture, contain, and treat all contaminated dewatering and/or contaminated stormwater prior to discharge to Lake River.

5. All captured sediment from the treatment of the dewatering or contaminated stormwater must be transported to an approved disposal facility based on the level of contamination.

6. Capped soils will be excavated and stockpiled during construction and used as final cap according to Ecology's MTCA Consent Decree CD13-2-03830-1. Any contaminated soils excavated and not immediately hauled offsite must be protected to minimize contact with stormwater.

7. All dewatering water or contaminated stormwater must be initially batch sampled prior to discharge to Lake River. Two distinct batch sampling periods are required to demonstrate effectiveness of the treatment system. Water will be collected, treated, and held until sample results shows parameters are below indicator levels. This is done two times, prior to beginning a flow-through system. This batch sampling must occur at the beginning of construction in Carty Lake **and again** during the dredging of Lake River when construction stormwater comingles with dewatering water of dredge sediments and is discharged to Lake River. Water must be held until lab results show effectiveness of the treatment system. Once final lab results have shown contaminated construction water parameters are below the indicator levels for two consecutive batch samples as shown in Table 1, a flow through system may be used. Gasoline-range hydrocarbons, diesel-range hydrocarbons, benzo(a)pyrene, and pentachlorophenol must be analyzed.
    a. The final lab results of the initial batch sampling must be provided to Ecology prior to discharge (See Ecology contact information below).
    b. If all contaminants are found below indicator levels on Table 1, discharge may occur.

8. Once the flow-through system is utilized, gasoline-range and diesel-range hydrocarbons, benzo(a)pyrene, and pentachlorophenol parameters must be sampled weekly (within seven days of each sampling if discharge occurs). If discharges occur when test results show above indicator levels found on Table 1, discharges must immediately cease and water must be retreated and re-sampled prior to discharging to Lake River. Discharge must cease until the water has been retreated, re-sampled, and results show below indicator levels.

9. All monitoring data must be prepared by a laboratory registered or accredited under the provisions of, *Accreditation of Environmental Laboratories*, Chapter 137-50 WAC.

10. If sampling is conducted more frequently than required by this Order, the results of this monitoring must be included in the calculation and reporting of the data that is submitted in the Discharge Monitoring Reports (DMRs).

11. Five outfalls will report pH and turbidity.

12. A separate outfall tight-lined from the treatment system will also discharge to Lake River. This outfall will report parameters set forth in Table 1 of this Administrative Order in the DMRs.

13. All sampling data must be reported monthly on Discharge Monitoring Reports (DMRs) electronically using Ecology's secure online system WQWebDMR, in accordance to permit condition S5.B. This includes gasoline-range and diesel-range hydrocarbons, benzo(a)pyrene, and pentachlorophenol. If the measured concentration is below the detection level than Port of Ridgefield shall report single analytical values below detection as "less than the detection level (DL)" by entering "<" followed by the numeric value of the detection level (e.g. "<0.1"). All other values above DL must be reported as the numeric value.

14. Immediately upon receipt, provide a copy of all final lab reports (two initial batch samples and weekly samples) to Ecology's SWRO contaminated construction stormwater permit manager (See information below).

15. Any discharge to waters of the state in exceedance of the contaminant indicator level in Table 1 except for turbidity and pH criteria must be reported according to Permit condition S5. F., Noncompliance Notification as follows:
    a. Immediately notify Ecology of noncompliance by calling the regional 24-hour Environmental Report Tracking System (ERTS) phone number (360) 407-6300.
    b. Cease the discharge until indicator levels can be met.
    c. Submit a detailed written report to Ecology within five (5) days, unless requested earlier by Ecology. See CSWG Permit condition S5. F. 3. For Noncompliance Notification requirements.

16. The Stormwater Pollution Prevention Plan (SWPPP) prepared for the Port of Ridgefield dated July 28, 2014 and SWPPP Figures 1-1 and 2-1 through 2-8 (dated July 25, 2014) shall be fully implemented and amended as needed for the duration of the project. Carty Lake sediment excavation will occur prior to the Lake River sediment dredging; and contaminated construction stormwater will be treated and tested prior to initial discharge, and tested weekly once a flow-through system is established.

17. If a modification of the Order is desired, a written request shall be submitted to Ecology and if approved, Ecology will issue an approval letter or an amendment to this Order.

Ecology retains the right to make modifications to this Order through supplemental order, or amendment to this Order, if it appears necessary to further protect the public interest.

This Order does not exempt Port of Ridgefield from any Construction Stormwater General Permit requirement.

Table 1. Carty Lake and Lake River In-Water S&R (WAR302135)

Port of Ridgefield must use the specified analytical methods, detection limits (DLs) and quantitation levels (QLs) in the following table for monitoring unless the method used produces measurable results in the sample and EPA has listed it as an EPA-approved method in 40 CFR Part 136. If the Port of Ridgefield uses an alternative method, not specified in the order and as allowed above, it must report the test method, DL, and QL on the discharge monitoring report.

Pollutant & CAS No. (if available)	Sampling Frequency (after initial batch testing)	Sample Type	Indicator Level, µg/L unless otherwise noted	Required Analytical Protocol	Detection Level, µg/L	Quantitation Level, µg/L
PETROLEUM HYDROCARBONS						
Gasoline-range hydrocarbons (NWTPH-Gx)	Weekly	Grab	250[a]	NWTPH-Gx	250	250
Diesel-range hydrocarbons (NWTPH-Dx)	Weekly	Grab	250[a]	NWTPH-Dx	250	250
BASE/NEUTRAL COMPOUND						
Benzo(a)pyrene (50-32-8)	Weekly	Grab	1.0[a]	610/625	0.5	1.0
ACID COMPOUND						
Pentachlorophenol (87-86-5)	Weekly	Grab	21[b]	625	0.5	1.0
Construction Stormwater General Permit Benchmarks						
Parameter			**Benchmark**		**Analytical Method**	
Turbidity [c]	Daily	Metered/ recorded	25 NTU		SM2130 *	
pH [c]	Daily	Metered/ recorded	6.5 - 8.5 SU		SM4500-H^+ B	

a	No surface water standard, value is laboratory quantitation level.
b	Acute - Freshwater Toxic Substances Criteria (WAC 173-201A-240) Based on pH of 7.82 for pH Dependent Acid Compounds.
c	Report the daily turbidity and pH for each day a discharge occurs while the system is in operation.
	NWTPH-Gx: Northwest Total Petroleum Hydrocarbons Gasoline Extended Range NWTPH-Dx: Northwest Total Petroleum Hydrocarbons Diesel Extended Range
*	Or equivalent.

FAILURE TO COMPLY WITH THIS ORDER

Failure to comply with this Order may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce the terms of this Order.

YOUR RIGHT TO APPEAL

You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do both of the following within 30 days of the date of receipt of this Order:

- File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Order on Ecology in paper form – by mail or in person (see addresses below). Email is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

Your appeal alone will not stay the effectiveness of this Order. Stay requests must be submitted in accordance with RCW 43.21B.320.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503 **Pollution Control Hearings Board** 1111 Israel Road SW Suite 301 Tumwater, WA 98501	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608 **Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

CONTACT INFORMATION

Please direct all questions about this Order to:

Carol Serdar
Department of Ecology
Southwest Regional Office
300 Desmond Dr.
Olympia WA 98503

Phone: (360) 407 - 6269
Email: carol.serdar@ecy.wa.gov

MORE INFORMATION

- **Pollution Control Hearings Board Website**
  www.eho.wa.gov/Boards_PCHB.aspx
- **Chapter 43.21B RCW – Environmental Hearings Office – Pollution Control Hearings Board**
  http://apps.leg.wa.gov/RCW/default.aspz?cite=43.21B
- **Chapter 371-08 WAC – Practice and Procedure**
  http://apps.leg.wa.gov/WAC/default.aspx?cite=371-08
- **Chapter 34.05 RCW – Administrative Procedure Act**
  http://apps.leg.wa.gov/RCW/default.aspx?cite=34.05
- **Laws:** www.ecy.wa.gov/laws-rules/ecyrcw.html
- **Rules:** www.ecy.wa.gov/laws-rules/ecywac.html

SIGNATURE

Richard Doenges
Section Manager
Water Quality Program
Southwest Regional Office

August 5, 2014
Date

WAR302135
Carty Lake & Lake River in Water Sediment Remediation
111 W Division St
Ridgefield Clark

Issuance Date: December 1, 2010
Effective Date: January 1, 2011
Expiration Date: December 31, 2015

CONSTRUCTION STORMWATER GENERAL PERMIT

National Pollutant Discharge Elimination System (NPDES) and State Waste Discharge General Permit for Stormwater Discharges Associated with Construction Activity

State of Washington
Department of Ecology
Olympia, Washington 98504

In compliance with the provisions of
Chapter 90.48 Revised Code of Washington
(State of Washington Water Pollution Control Act)
and
Title 33 United States Code, Section 1251 et seq.
The Federal Water Pollution Control Act (The Clean Water Act)

Until this permit expires, is modified or revoked, Permittees that have properly obtained coverage under this general permit are authorized to discharge in accordance with the special and general conditions that follow.

Kelly Susewind, P.E., P.G.
Water Quality Program Manager
Washington State Department of Ecology

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, Washington 98115

Refer to NMFS No:
WCR 2013-104

April 10, 12014

Michelle Walker
Chief Regulatory Branch
Department of the Army
Seattle District, Corps of Engineers
P.O. Box 3755
Seattle, Washington 89124-3755

Re: Endangered Species Act Section 7 informal consultation for the Lake River Remedial Action, Ridgefield, Washington (HUC: 170800030104)

Dear Ms. Walker

On November 22, 2013, NOAA's National Marine Fisheries Service (NMFS) received your request for a written concurrence that the Corps of Engineers COE proposal to authorize the Port of Ridgefield to dredge contaminated sediment from Lake River under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act is not likely to adversely affect (NLAA) species listed as threatened or endangered or critical habitats designated under the Endangered Species Act (ESA). This response to your request was prepared by NMFS pursuant to section 7(a)(2) of the ESA, implementing regulations at 50 CFR 402, and agency guidance for preparation of letters of concurrence.

NMFS also reviewed the proposed action for potential effects on essential fish habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), including conservation measures and any determination you made regarding the potential effects of the action. This review was pursuant to section 305(b) of the MSA, implementing regulations at 50 CFR 600.920, and agency guidance for use of the ESA consultation process to complete EFH consultation. In this case, NMFS concluded the action would not adversely affect EFH. Thus, consultation under the MSA is not required for this action.

This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). A complete record of this consultation is on file at the NMFS office in Lacey, WA.

Proposed Action and Action Area

The COE proposes to permit the Port of Ridgefield to dredge 14,000 cubic yards of contaminated sediment from the channel of Lake River adjacent to a former wood treatment facility. Sediment in the channel is contaminated with dioxins. The Washington State Department of Ecology analyzed sediment samples to determine the horizontal and vertical distribution of contaminated sediment. Dioxin concentrations greater than 100 parts per trillion (pptr) are located in sediment near the streambank at the sites of the stormwater outfalls for the wood treatment facility. Dioxin concentrations decrease to less than 5 pptr in the middle of the channel.

Before dredging, remnants of old in water structures, including some dolphins, pilings and a dock, will be pulled out of the sediment with chokers or removed with a vibratory pile driver, and transported to an upland site for disposal.

The dredging contractor will remove between 1 and 4 feet of the contaminated sediment over a 2.7 acre area below BFW along approximately 2250 feet of the east side of the channel. This is a remediation project to remove contaminated sediment from the action area, minimize the production of residuals and bury residuals under clean sediment. Residuals are contaminated sediment that is disrupted but not removed by the dredge bucket grab or contaminated sediment that spills from the dredge bucket. Contaminants in residuals are more bioavailable than contaminants in undisturbed sediment. To minimize residual production, the contractor will use precision dredging with a fixed arm hydraulic excavator and a double arc enclosed clamshell bucket (also called a Young's bucket). The two halves of the bucket are closed by the hydraulic power of the excavator and completely enclose the sediment as it is lifted through the water column to prevent sediment from washing out over the top edge of the bucket. Each point in the action area will be dredged by two passes. The first pass removes most of the contaminated sediment and the second "cleanup" pass removes any residuals generated by the first pass.

Dredged sediment will be placed onto material barges. Water that drains from the dredged sediment will be contained by the barge binwalls until it is pumped from the barge to an upland treatment system.

If the Columbia River water level is high enough during the dredging, barges with 800 to 1200 cubic yards of dewatered sediment will be towed directly to a hazardous waste landfill. If the river is low, the barge will be moved to an offload berth at the project site where the sediment will be transferred to a dewatering area, loaded onto trucks and transported to a hazardous waste landfill.

Clean sand will be placed over areas with dioxin concentrations below 30 pptr to mix with and dilute contaminated sediment. As each reach is dredged clean sand will be placed over the dredged area to trap, mix with and dilute residuals. A total of 13,000 cubic yards of clean sediment will be used over 5.7 acres.

Dredging will increase the slope of the riverbank. The cleanup contractor will place a 2 foot layer of erosion resistant fish mix from the toe of the bank slope to the ordinary high waterline. Fish mix is coarse gravel mixed with larger river cobbles to prevent erosion from waves and provide structure to support the bank.

The contractor will plant 44 trees and 374 shrubs in three groves spanning 500 feet along the streambank to replace 148 feet of trees and shrubs that will be removed when the riverbank is regraded and armored with fish mix. The contractor will fill in the space between the groves with native grasses. During the first two years after the project, all trees or shrubs that die will be replaced. During the next three years, trees and shrubs will be replaced to achieve 80% survival of the original planting.

There are two interrelated actions associated with this project. The Port of Ridgefield will apply to rebuild the overwater structures removed for to allow dredging. This application to rebuild these structures will be the subject of a separate NMFS consultation. The upland portion of the former industrial property has also been remediated and will be redeveloped consistent with the mixed zoning designation of the site.

The in water work window for this project is October 1 to January 15.

The action area is 5.7 acres (2250 feet x 175 feet) of the east side of the Lake River channel adjacent to the Port of Ridgefield Miller's Landing property. Lake River originates in Lake Vancouver and runs parallel to the Columbia River. Salmon Creek is a tributary to Lake River.

Action Agency's Effects Determination

Table 1: ESA listed species that could be exposed to the effects of the proposed action

Species	ESU or DPS	Original Listing Notice	Listing Status Reaffirmed	Critical Habitat	Protective Regulations	Action Agency Effect Determination
Chinook salmon (*Oncorhynchus tshawytscha*)	Lower Columbia River	03/24/99 64 FR 14308 Threatened	08/15/11 76 FR 50448 Threatened	09/02/05 70 FR 52630	06//28/05 70 FR 37160	NLAA
	Upper Willamette River spring-run	03/24/99 64 FR 14308 Threatened	08/15/11 76 FR 50448 Threatened	09/02/05 70 FR 52630	06//28/05 70 FR 37160	NLAA
	Upper Columbia River spring-run	E 03/24/99 64 FR 14308 Endangered	08/15/11 76 FR 50448 Endangered	09/02/05 70 FR 52630	ESA section 9 applies	NLAA
	Snake River spring/summer run	04/22/92 57 FR 14653 Threatened ------ 06/03/92 57 FR 23458 Correction	08/15/11 76 FR 50448 Threatened	10/25/99 64 FR 57399	06/28/05 70 FR 37160	NLAA
	Snake River fall-run	04/22/92 57 FR 14653 Threatened	08/15/11 76 FR 50448 Threatened	12/28/93 58 FR 68543	06/28/05 70 FR 37160	NLAA
Chum salmon (*O. keta*)	Columbia River	03/25/99 64 FR 14507 Threatened	08/15/11 76 FR 50448 Threatened	09/02/05 70 FR 52630	06/28/05 70 FR 37160	NLAA
Coho salmon (*O. kisutch*)	Lower Columbia River	06/28/05 70 FR 37160 Threatened	08/15/11 76 FR 50448 Threatened	01/14/13 78 FR 2725	06/28/05 70 FR 37160	NLAA
Sockeye salmon (*O. nerka*)	Snake River	11/20/91 56 FR 58619 Endangered	08/15/11 76 FR 50448 Endangered	12/28/93 58 FR 68543	ESA section 9 applies	NLAA

Species	ESU or DPS	Original Listing Notice	Listing Status Reaffirmed	Critical Habitat	Protective Regulations	Action Agency Effect Determination
Steelhead (*O. mykiss*)	Lower Columbia River	03/19/98 63 FR 13347 Threatened	01/05/06 71 FR 834 Threatened	09/02/05 70 FR 52630	06/28/05 70 FR 37160	NLAA
	Upper Willamette River	03/25/99 64 FR 14517 Threatened	01/05/06 71 FR 834 Threatened	09/02/05 70 FR 52630	06/28/05 70 FR 37160	NLAA
	Middle Columbia River	03/25/99 64 FR 14517 Threatened	01/05/06 71 FR 834 Threatened	09/02/05 70 FR 52630	06/28/05 70 FR 37160	NLAA
	Upper Columbia River	08/18/97 62 FR 43937 Endangered	01/05/06 71 FR 834 Threatened	09/02/05 70 FR 52630	02/01/06 71 FR 5178	NLAA
	Snake River Basin	08/18/97 62 FR 43937 Threatened	01/05/06 71 FR 834 Threatened	09/02/05 70 FR 52630	06/28/05 70 FR 37160	NLAA
North American Green Sturgeon (*Acipenser medirostris*)	Southern DPS	04/07/06 71 FR 17757 Threatened	Not applicable	10/09/09 74 FR 52300	06/02/2010 74 FR 30714 Proposed	NLAA
Pacific eulachon (*Thaleichthys pacificus*)	Southern DPS	03/18/10 75 FR 13012 Threatened	Not applicable	01/05/11 76 FR 515 Proposed	10/20/2011 76 FR 65324	NLAA

The COE reasoned that effects of the project to salmon and steelhead would be NLAA because: (1) increased noise and turbidity during construction activities would be temporary and localized, (2) the double arc enclosed clamshell bucket minimizes the release of sediment laden water during dredging operations, (3) the lost invertebrate food supply in the dredged sediment will be replaced with uncontaminated invertebrates that will rapidly recolonize the clean sand cap, and that water quality in the action area will improve after the contaminated sediment is removed. The COE reasoned that effects of the project to green sturgeon and eulachon are NLAA because these species are unlikely to be in the action area during the in water work window.

Consultation History

On June 26, 2013, Joyce Mercuri of the Washington State Department of Ecology (DOE) briefed the NMFS on the Lake River remediation project and provided NMFS with background data on the location and levels of dioxin contamination in the sediment. In October 2013, the DOE finalized the Cleanup Action Plan (CAP) for the Lake River site (WSDOE, 2013). The CAP called for the removal by dredging of sediment with dioxin concentrations greater than 30 parts per trillion (pptr), the addition of a clean sand layer over sediments with dioxin concentrations between 5 pptr and 30 pptr. On November 22, 2013, NMFS received a project description with details on the remediation approach, a Biological Assessment and a copy of the Washington State Joint Aquatic Resources permit Application Form (JARPA) from the COE. On January 13, 2014, the remediation contractor, Maul Foster Alongi, gave NMFS a tour of the project site. Between January 7, 2014 and January 17, 2014, the COE and the applicant determined the fraction of the project riparian zone that was covered with vegetation in the environmental baseline and the amount of vegetation that was required to be planted to meet the COE 2:1 mitigation rule. On January 17, 2014 the Ports contractor provided NMFS with a draft copy of the Revised Lake River Riparian Enhancement Plan. On January 28, 2014 the COE provided

NMFS with the Revised Lake River Riparian Enhancement Plan. NMFS initiated informal consultation on February 28, 2014.

ENDANGERED SPECIES ACT

Effects of the Action

Under the ESA, "effects of the action" means the direct and indirect effects of an action on the listed species or critical habitat, together with the effects of other activities that are interrelated or interdependent with the action (50 CFR 402.02). The applicable standard to find that a proposed action is not likely to adversely affect listed species or critical habitat is that all of the effects of the action are expected to be discountable, insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or critical habitat. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur.

The effects of the proposed action are reasonably likely to include the introduction of suspended, contaminated sediment to the water column with concomitant phase transfer of contaminants, construction noise, the potential for entrainment of listed fish in the dredge bucket, and the disruption of the food web by the removal of benthic communities in the dredged sediment.

Mechanisms of Potential Effect

The removal of pilings creates suspended sediment. NMFS reviewed data generated from a piling removal project near the mouth of Jimmycomelately Creek in Sequim Bay (Weston_Solutions, 2006) to predict the potential effects of suspended sediment from piling removal and piling driving. Total suspended solid (TSS) concentrations from the tug boat propeller wash as it maneuvered the pile driver barge to and from pile locations exceeded 50 to 100 milligrams per liter (mg/L) and generally returned to background levels of 10 mg/L or less within 5 minutes. TSS concentrations associated with activation of the vibratory hammer to loosen the pile from the substrate ranged from 13 to 42 mg/L and averaged 25 mg/L. TSS concentrations during extraction ranged from 20 to 82.9 mg/L and averaged 40 mg/L at the pile and 26 mg/L at the sensor 16-33 feet from the pile. TSS was sometimes visible in the water column as a 10 to 16 foot diameter plume that extended at least 15 to 20 feet from the actual pulling event.

Dredging suspends and deposits of sediment at the dredging site. Bridges et al. (2008) estimate that approximately 2-9% of the sediment removed in each bucket grab is lost as suspended sediment. However, the fixed arm excavator and double arc enclosed clamshell bucket to be used in this project to increases the precision of the vertical position of each grab minimizes the loss of sediment into the water column as the bucket is raised. Working slowly and using two dredge passes at each point further minimizes generated residuals will also minimize suspended sediment. Precsion equipment and controlled methods limit resuspension to .5% so approximately 70 cy of sediment will become suspended over the course of the project. Lake River is a low-energy, tidally influenced backwater of the Columbia River with a maximum measured current of 2.6 feet per second. NMFS expects that most suspended sediment will resettle before it is transported beyond the action area. ESA-listed juvenile salmon are not likely to rear near dredge operations due to the noise from the dredge. They can avoid the area with

insignificant energy expenditure. For fish that are exposed to the suspended sediment, the Newcombe et al. (1996) scale of ill effects as a function of sediment concentration and exposure duration estimates that fish would need to be in the suspended sediment plume for several hours to experience sublethal physical effects such as reduction in feeding success and minor physiological stress exhibited by coughing and an increased respiration rate. Given that the proposed action will adhere to a stringent list of best management practices, the effects of suspended sediment are to ESA-listed fish insignificant.

NMFS does not expect sound generated from the removal of piles and dredging to adversely affect listed fish because vibratory hammers and hydraulic dredge equipment do not produce acoustic energy at frequencies or with wave forms that are likely to injure fish. Therefore, NMFS considers effects from sound to be insignificant.

This project is in shallow water where juvenile salmonid rearing is most likely. NMFS does not expect dredging to result in entrainment of juvenile salmon or steelhead. Reine and Clark (1998) report hopper and pipeline entrainment rates of .001 to .035 fish/cy dredged for a range of sport and commercial fish. Based on data from Larson and Moehl (1990) they report that entrainment of anadromous fish with hopper and pipeline dredging outside of constricted rivers is very rare. Entrainment of anadromous fish by clamshell dredges is expected to be even lower because 1) The contact footprint of the clam shell dredge is small 2) dredging is done continuously in one small zone, increasing the probability that fish will of escape and avoid the area; and 3) noise in the relatively shallow waters will increase the probability that fish will avoid the area. Coupled with the low density of fish expected to be rearing in this action area, NMFS concludes that the likelihood of entrainment during dredging is insignificant.

Effect Determinations, By Species

Columbia River, Snake River and Willamette River Salmon and Steelhead

Salmonid species in the Lake River / Salmon Creek watershed include winter steelhead, fall Chinook and coho (chum salmon have been extirpated from Salmon Creek). Salmon Creek fall Chinook adult upstream migration begins in early August or September. Spawning peaks in October. Fry emerge around early April, spend the spring in fresh water and emigrate in the summer as sub yearlings. Adult fall Chinook may be in the action area at the start of the work window but juvenile fall Chinook will not be in the action area during the work window.

Salmon Creek early coho spawn in early to mid-November and late stock spawn from November to March. Spawning occurs in the upper Salmon Creek mainstem and tributaries, well upstream from the action area. There is potential coho spawning in Whipple Creek, closer to the action area. Juvenilles rear in fresh water for a year before migrating as yearlings in the Spring. Adult migrating coho may be in the action area during the work window and exposed to the effects of the action. Subyearling coho may be rearing in the action area. Migrating juvenile coho will not be in the action area during the work window.

Salmon Creek winter steelhead spawn from early March to early June throughout Salmon Creek, and in Whipple Creek. Juveniles move upstream and downstream from spawning sites while

rearing for two years and migrating in the spring. Migrating adult and juvenile steelhead will not be in the action area during the work window. There is a possibility that rearing winter steelhead juveniles may enter the action area during the work window, but the slough-like habitat conditions in Lake River are not preferred rearing conditions for this species, which prefers higher velocity gradients over gravel and cobble substrates, with significant wood loading along channel margins for refuge—all conditions which are lacking in the action area.

Although the action area is accessible to migrating SR, MCR, UCR, and Willamette River adult and juvenile salmon and steelhead during the work window, these fish are traveling rapidly upstream or downstream in the Columbia River and the likelihood that they will enter Lake River and be exposed to project effects is so unlikely that any exposure to the effects of the action would be of such limited duration, and the nature of the effects of the action, as discussed, are of such low risk, that the effects of the action are insignificant and unlikely to rise to the level of take.

Pacific Eulachon

Pacific eulachon enter the lower Columbia River to spawn from December to March. Major spawning occurs in the Lower Columbia River (NMFS, 2008). Larvae hatch out and drift to the sea by early June. The proposed work window of October 1 through January 15 reduces but does not eliminate the possibility that adult eulachon will be exposed to the project's effects. However, even though the action area is accessible to migrating adult eulachon, Lake River and Salmon Creek are not designated critical habitat for eulachon and there is no record of eulachon spawning in these waters so the risk of exposure is discountable.

North American Green Sturgeon

Adult green sturgeon from the listed southern DPS are present in the lower Columbia River in the late summer (Lindley et al., 2011) and have been observed as far upriver as Bonneville Dam but their presence generally ends approximately 50 miles downstream from the action area. Green sturgeon will not be exposed to the effects of the proposed action.

Effect on Critical Habitat

Lake River is designated critical habitat for LCR Chinook, LCR steelhead, and CR chum. Lake River is proposed critical habitat for LCR coho. The Columbia River mainstem is designated critical habitat for eulachon. Removal of contaminated sediment in the action area will improve critical habitat PCEs for each of these species. Water quality will improve and forage will improve.

Dredging will temporarily remove forage invertebrates such as polychaete worms, crustacean, and other prey types but the dredge area will repopulate within 6-8 months and until then, ESA-listed species could find adjacent areas for rearing at an insignificant energy expense.

Conclusion

Based on this analysis, NMFS concurs with the COE that the proposed action is not likely to adversely affect the subject listed species and designated critical habitats.

Reinitiation of Consultation

Reinitiation of consultation is required and shall be requested by the COE or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (2) the identified actin is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this concurrence letter; or if (3) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16). This concludes the ESA consultation.

Please direct questions regarding this letter to Tom Hausmann (tom.hausmann@noaa.gov, (360) 753-9596) at the Oregon Washington Coastal Area Office.

Sincerely,

for William W. Stelle, Jr.
Regional Administrator

cc: Steven Manlow, COE

References

Bridges, T.S., P. Schroeder, S. Ells, D. Hayes, D. Mount, S. Nadeau, M. Palermo, and C. Patmont. 2008. The four Rs of environmental dredging: resuspension, release, residual and risk. Engineer Research and Development Center, US Army Corps of Engineers

Larson, K.W., and C.E. Moehl. 1990. Entrainment of anadromous fish by hopper dredge at the mouth of the Columbia River. *In* Effects of dredging on anadromous Pacific coast fishes. C.A. Simenstad, editor, Seattle, Washington.

Lindley, S.T., D.L. Erickson, M.L. Moser, G. Williams, O.P. Langness, B.W. McCovey, M. Belchik, D. Vogel, W. Pinnix, J.T. Kelly, J.C. Heublein, and A.P. Klimley. 2011. Electronic Tagging of Green Sturgeon Reveals Population Structure and Movement among Estuaries. *T Am Fish Soc.* 140:108-122.

Newcombe, C.P., J.O.T. Jensen, and BC Environment. Habitat Protection Branch. 1996. Channel suspended sediment and fisheries : a synthesis for quantitative assessment of risk and impact. Ministry of Environment, Lands, and Parks, Habitat Protection Branch, Victoria, B.C. ii, 90, 25 p. pp.

NMFS. 2008. Summary of scientific conclusions of the review of the status of eulachon (*Thaleichthys pacificus*) in Washington, Oregon and California. N.M.F. Service, editor. Northwest Fisheries Science Center, Seattle, WA. 229.

Reine, K., and D. Clark. 1998. Entrainment by hydraulic dredges - A review of potential impacts. U.S. Army Engineery Research and Development Center, Vicksburg, MS.

Weston_Solutions. 2006. Jimmycomelately piling removal monitoring project, Final Report. Prepared for Jamestown S'Klallam Tribe, Port Townsend, Washington. 109.

WSDOE. 2013. Cleanup Action Plan Former Pacific Wood Treating Co. Site. Washington State Department of Ecology, Olympia, Washington.

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

Regulatory Branch

APR 2 8 2014

Allyson Brooks, Ph.D.
State Historic Preservation Officer
Washington State Department of Archaeology
and Historic Preservation
Post Office Box 48343c
Olympia, Washington 98504-8343

Reference: NWS-2013-0875
Lake River Remedial
Action
No Historic Properties

Dear Dr. Brooks:

The U.S. Army Corps of Engineers (Corps) Regulatory Branch has received a permit application from the Port of Ridgefield associated with a contaminant remediation project located at the Port of Ridgefield's Lake River Industrial Site, at Secs 13 and 24, T04N, R01W, Saint Helens, OR-WA and Ridgefield USGS 7.5'quadrangle in Ridgefield, Clark County, Washington. The proposed work includes excavating contaminated sediment within Lake River, placing sand on the dredged surface to control sediment residuals and enhance recovery of low-level contamination, and placing rounded river rock to stabilize shoreline areas. Prior to dredging, existing dolphins, piles and overwater structures will be removed and transported to an upland disposal facility. Dredging will be conducted with a double-arc enclosed clamshell bucket, and dredged material will be placed on a barge for transport to an approved upland disposal facility. Free liquid that drains from the dredged sediment will be collected and treated for turbidity before discharge back into Lake River, within the dredge area. Upon completion of dredging, the bed will be covered with an approximately one-foot deep layer of sand. Disturbed banks will be stabilized by placing geotextile fabric overlain with up to two feet of gravel and cobbles, at a 4-foot-horizontal to 1-foot-vertical or flatter slope. Riparian vegetation will be established to stabilize the shoreline. The purpose of the project is to remediate legacy contaminants in Lake River in accordance with an Agreed Order between the applicant and Washington State Department of Ecology.

The project is within the boundaries of the Shoto Villages, Vancouver Lakes Archaeological District. On either bank of the proposed dredge locations archaeological sites have been recorded. Site 45CL108, recorded in the 1970s as a concentration of artifacts in an erosional cut bank, is located on the west bank. No work is proposed on the west bank, and this site will not be affected by the proposed dredging. Site 45CL4 is located on the east bank, and is a large NRHP-eligible

site that at one time was thought to be the location of the Cathlapotle village visited by Lewis and Clark in 1806. Beach habitat restoration is proposed for the east bank.

The proposed dredging is 100 percent located within areas that have been dredged in the past, as indicated in Willamette Cultural Resources Associates, Ltd. (WCRA) report titled *Review of Data on the Stratigraphic Context of Archaeological Deposits in Lake River, Ridgefield, Washington* dated June 25, 2013, copy enclosed.

The upland beach work is largely in areas that are either covered by fill or have been previously disturbed. It is not anticipated that intact portions of the site will be disturbed by construction. Some artifacts have eroded from the cut banks of 45CL4 onto the beach. According to WCRA, "prior to placement of the rock stabilization, the Port will retain the services of a professional archaeologist to systematically map the distribution of artifacts on the beach within the area to be stabilized. Temporally and functionally diagnostic artifacts, sacred objects, and objects of cultural patrimony will be collected. Any archaeological artifacts collected as part of this project be curated with the rest of the collection, currently located at the Burke Museum of Natural History and Culture in Seattle, Washington."

The Port Ridgefield "will provide on-site monitoring during all activity associated with cleanup actions that would involve potential disturbance of native soils. The archaeological monitor will coordinate his or her monitoring actions with Tribal monitors who may also be present." WCRA prepared an archaeological monitoring plan titled *Final Archaeological Monitoring and Inadvertent Discovery Plan for the Lake River Remedial Action*, copy enclosed. The Corps will require that any work that has the potential to disturb native sediments be archaeologically monitored.

Based on the results presented above, and given the requirement for archaeological monitoring, the Corps has determined that there would be no adverse effect to 45CL4 or any other property by this undertaking and invites your comments. If you have any questions or need additional information, please contact Mr. Lance Lundquist at lance.a.lundquist@usace.army.mil or (206) 764-6909 or me at paul.c.jenkins@usace.army.mil or (206) 764-6941.

Sincerely,

Chris Jenkins
Cultural Resources Program Manager
Regulatory Branch

Enclosure

State of Washington
Department of Fish and Wildlife
2108 Grand Blvd. Vancouver WA 98661 (360) 696-6211

MEMORANDUM

Date: June 4, 2014

TO: Joyce Mercuri, Washington Department of Ecology

FROM: Dave Howe for Anne Friesz, Assistant Regional Habitat Program Manager

SUBJECT: Lake River Remedial Action

According to RCW 70.104D.090, this project is exempt from a Hydraulic Project Approval (HPA). Therefore, this memo to Ecology gives provisions that WDFW encourages to be implemented for the duration of the project.

- Work below the ordinary high water line shall only occur between OCTOBER 1, 2014 and JANUARY 15, 2015.
- Dredging equipment shall be well-maintained and in good repair to prevent the loss of lubricants, grease, and any other deleterious materials from entering the stream.
- All containers storing fuel or other deleterious substances on the barge shall be secured during dredging operations to prevent incidental spills.
- If at any time, as a result of project activities, fish are observed in distress, a fish kill occurs, or water quality problems develop (including equipment leaks or spills), immediate notification shall be made to the Washington Military Department's Emergency Management Division at 1-800-258-5990, and to Anne Friesz, Assistant Regional Habitat Program Manager at 360-906-6764.
- Every effort shall be taken during all phases of this project to ensure that sediment-laden water is not allowed to enter the stream.
- Turbidity will be measured during construction and will meet the water quality criteria established by Washington Department of Ecology.
- Extreme care shall be taken to ensure that no petroleum products, hydraulic fluid, fresh cement, sediments, chemicals, or any other toxic or deleterious materials are allowed to enter or leach into the stream.
- Bank or bulkhead stabilization work shall be restricted to work necessary to protect the eroding bank.
- Native vegetation removed during construction will be replaced per the proposed plans.
- Pile shall be disposed of at a municipal solid waste landfill, per WAC 173-351.

cc: Madi Novak – Maul Foster & Alongi, Inc.
Brent Grening – Port of Ridgefield
Dave Howe – WDFW

When recorded return to:
Port of Ridgefield
PO Box 55
Ridgefield, WA 98642

WASHINGTON STATE DEPARTMENT OF
Natural Resources
Peter Goldmark - Commissioner of Public Lands

AQUATIC LANDS SEDIMENT REMEDIATION EASEMENT

Easement No. 51-091559

THIS AGREEMENT is made by and between the STATE OF WASHINGTON, acting through the Department of Natural Resources ("State"), and the PORT OF RIDGEFIELD, a government entity ("Grantee").

Grantee seeks to fulfill Grantee's obligation to undertake remedial action for contaminated sediments located on the real property that is the subject of this Agreement. Grantee's obligation arises under a consent decree issued by the Washington State Department of Ecology ("Regulatory Agency"), cited in Exhibit B as: Ecology. 2013. Consent Decree No. 13-2-03830-1, former Pacific Wood Treating Co. site. Washington State Department of Ecology. November 15.

THE Parties agree as follows:

SECTION 1 GRANT OF EASEMENT

1.1 Easement Defined.

(a) State grants and conveys to Grantee a nonexclusive easement, subject to the terms and conditions of this agreement, over, upon, and under the real property at the Port of Ridgefield, described in Exhibit A. In this agreement, the term "Easement" means this agreement and the rights granted; the term "Easement Property" means the real property subject to the easement.

(b) This Easement is subject to all valid interests of third parties noted in the records of Clark County, or on file in the Office of the Commissioner of Public Lands, Olympia, Washington; rights of the public under the Public Trust Doctrine or federal navigation servitude; and treaty rights of Indian Tribes.

(c) Except as necessary for the Permitted Use, this Easement does not include any right to harvest, collect or damage any natural resource, including aquatic life or living plants, any water rights, or any mineral rights, including any right to excavate or withdraw sand, gravel, or other valuable materials.

1.2 Survey and Easement Property Descriptions.

(a) Grantee prepared Exhibit A, which describes the Easement Property. Grantee warrants that Exhibit A is a true and accurate description of the Easement boundaries and the improvements to be constructed or already existing in the Easement area.

(b) Grantee shall not rely on any written legal descriptions, surveys, plats, or diagrams ("property description") provided by State. Grantee shall not rely on State's approval or acceptance of Exhibit A or any other Grantee-provided property description as affirmation or agreement that Exhibit A or other property description is true and accurate. Grantee's obligation to provide a true and accurate description of the Easement Property boundaries is a material term of this Easement.

1.3 Condition of Easement Property. State makes no representation regarding the condition of the Easement Property, improvements located on the Easement Property, the suitability of the Easement Property for Grantee's Permitted Use, compliance with governmental laws and regulations, availability of utility rights, or access to the Easement Property.

SECTION 2 USE

2.1 Permitted Use. Grantee shall use the Easement Property for

the implementation of the Cleanup Action Plan (the "Permitted Use"),

and for no other purpose. The Permitted Use is described in: Ecology. 2013. Cleanup Action Plan, former Pacific Wood Treating Co. site. Washington State Department of Ecology. November 5., cited in Exhibit B.

2.2 Restrictions on Use.

(a) Except as necessary for the Permitted Use, Grantee shall not cause or allow damage to natural resources on the Easement Property. Grantee shall not cause or allow damage to natural resources on adjacent state-owned aquatic lands.

(b) Except as necessary for the Permitted Use, Grantee shall not cause or allow deposit of rock, sand, ballast or other similar materials the Easement Property. Grantee shall not cause or permit any filling activity of any kind on adjacent state-

owned aquatic land. Grantee shall not cause or allow deposit of wood waste, refuse, garbage, waste matter (including chemical, biological, or toxic wastes), hydrocarbons, any other pollutants, or other matter on the Easement Property or adjacent state-owned aquatic land.

(c) Grantee shall neither commit nor allow waste to be committed to or on the Easement Property or adjacent state-owned aquatic land.

(d) Failure to Comply with Restrictions on Use.

(1) Grantee's failure to comply with the restrictions on use under this Paragraph 2.2 is a default subject to Section 13. Grantee shall cure the default by taking all steps necessary to remedy the failure and restore the Easement Property and adjacent state-owned aquatic lands to the condition before the failure occurred within the time for cure provided in Section 13.

(2) If Grantee fails to cure the default in the manner described in this Paragraph 2.2(d), State may (1) restore the state-owned aquatic lands and charge Grantee restoration costs and/or (2) charge Grantee natural resource damages. On demand by State, Grantee shall pay all restoration costs and natural resources damages.

(e) State's failure to notify Grantee of Grantee's failure to comply with all or any of the restrictions set out in this Paragraph 2.2 does not constitute a waiver of any remedies available to State.

(f) Grantee's compliance with this Paragraph 2.2 does not limit Grantee's liability under Section 8, below.

2.3 Conformance with Laws. Grantee shall keep current and comply with all conditions and terms of any permits, licenses, certificates, regulations, ordinances, statutes, and other government rules and regulations regarding its use of the Easement Property.

2.4 Liens and Encumbrances. Grantee shall keep the Easement Property free and clear of any liens and encumbrances arising out of or relating to its use of the Easement Property, unless expressly authorized by State in writing.

2.5 Interference with Other Uses.

(a) Grantee shall exercise Grantee's rights under this Easement in a manner that minimizes or avoids interference with the rights of State, the public or others with valid right to use or occupy the Easement Property or surrounding lands and water.

(b) To the fullest extent reasonably possible, Grantee shall implement the Permitted Use in a manner that allows unobstructed movement in and on the waters above and around the Easement Property.

(c) Except in an emergency, Grantee shall provide State with written notice of construction or other significant activity on Easement Property at least thirty (30) days in advance. "Significant Activity" means any activity that may affect use or enjoyment by the State, public, or others with valid rights to use or occupy the Easement Property or surrounding lands and water.

(d) Grantee shall mark the location of any hazards associated with the Permitted Use and any Improvements in a manner that ensures reasonable notice to the public.

SECTION 3 TERM

3.1 Term Defined. This Easement begins on the First day of July 2014 (the "Commencement Date"), and continues for twelve (12) years, ending on the Thirtieth day of June 2026.

3.2 End of Term. Upon termination of this Easement, Grantee surrender the Easement Property to State restored to a substantially natural state, except for alterations authorized by State as a necessary element of the Permitted Use.

SECTION 4 FEES

4.1 Fee. Grantee shall pay to State a fee of Nineteen Thousand Five Hundred Dollars ($19,500.00), which is due and payable on or before the Commencement Date. Any payment not paid by State's close of business on the date due is past due.

4.2 Payment Place. Grantee shall make payment, if required, to Financial Management Division, 1111 Washington St SE, PO Box 47041, Olympia, WA 98504-7041.

SECTION 5 OTHER EXPENSES

5.1 Utilities. Grantee shall pay all fees charged for utilities in connection with Grantee's use of the Easement Property, if any.

5.2 Taxes and Assessments. Grantee shall pay all taxes, assessments, and other governmental charges, of any kind whatsoever, applicable or attributable to the Easement and the Permitted Use.

5.3 Failure to Pay. If Grantee fails to pay any of the amounts due under this Easement, State may pay the amount due, and recover its cost in accordance with Section 6.

SECTION 6 LATE PAYMENTS AND OTHER CHARGES

6.1 Late Charge. If State does not receive any payment within ten (10) days of the date due, Grantee shall pay to State a late charge equal to four percent (4%) of the amount of the payment or Fifty Dollars ($50), whichever is greater, to defray the overhead expenses of State incident to the delay.

6.2 Interest Penalty for Past Due Fees and Other Sums Owed.

(a) Grantee shall pay interest on the past due fee at the rate of one percent (1%) per month until paid, in addition to paying the late charges determined under Paragraph 6.1, above.

(b) If State pays or advances any amounts for or on behalf of Grantee, Grantee shall reimburse State for the amount paid or advanced and shall pay interest on that amount at the rate of one percent (1%) per month from the date State notifies Grantee of the payment or advance. This includes, but is not limited to taxes, assessments, insurance premiums, costs of removal and disposal of unauthorized materials pursuant to Paragraph 2.2 above, costs of removal and disposal of improvements pursuant to Section 7 below, or other amounts not paid when due.

6.3 Referral to Collection Agency and Collection Agency Fees. If State does not receive payment within thirty (30) days of the due date, State may refer the unpaid amount to a collection agency as provided by RCW 19.16.500 or other applicable law. Upon referral, Grantee shall pay collection agency fees in addition to the unpaid amount.

6.4 No Accord and Satisfaction. If Grantee pays, or State otherwise receives, an amount less than the full amount then due, State may apply such payment as it elects. No endorsement or statement on any check, any payment, or any letter accompanying any check or payment constitutes accord and satisfaction.

SECTION 7 IMPROVEMENTS

7.1 Improvements Defined.

(a) "Improvements," consistent with RCW 79.105 through 79.145, are additions within, upon, or attached to the land. This includes, but is not limited to, structures and fixtures.

(b) "State-Owned Improvements" are Improvements made or owned by State.

(c) "Grantee-Owned Improvements" are Improvements made by Grantee with State's consent. Grantee-Owned Improvements includes any materials deposited as part of the Permitted Use.

(d) "Unauthorized Improvements" are Improvements made on the Easement Property without State's prior consent or Improvements made by Grantee that do not conform with plans submitted to and approved by the State.

(e) "Improvements Owned by Others" are Improvements made by Others with a right to occupy or use the Easement Property or adjacent state-owned lands.

7.2 Existing Improvements. On the Commencement Date, the following Improvements are located on the Easement Property: bulkhead and water inlet. The Improvements are Grantee-Owned Improvements.

7.3 Construction, Major Repair, Modification, and Demolition.

(a) This Paragraph 7.3 governs construction, alteration, replacement, major repair, modification alteration, demolition and deconstruction of Improvements ("Work"). Section 11 governs routine maintenance and minor repair of Improvements and Easement Property.

(b) Except in an emergency, Grantee shall not conduct any Work, except as described in the Cleanup Action Plan, without State's prior written consent, as follows:

(1) State may deny consent if State determines that denial is in the best interests of the State. State may impose additional conditions reasonably intended to protect and preserve the Easement Property.

(2) Except in an emergency, Grantee shall submit to State plans and specifications describing the proposed Work at least sixty (60) days before submitting permit applications to regulatory authorities unless Grantee and State otherwise agree to coordinate permit applications. At a minimum, or if no permits are necessary, Grantee shall submit plans and specifications at least ninety (90) days before commencement of Work. This submittal requirement does not apply to activity described in the Cleanup Action Plan.

(3) State waives the requirement for consent if State does not notify Tenant of its grant or denial of consent within sixty (60) days of submittal.

(c) Grantee shall notify State of emergency Work within five (5) business days of the start of such Work. Upon State's request, Grantee shall provide State with plans and specifications or as-builts of emergency Work.

(d) Grantee shall not commence or authorize Work until Grantee has:

(1) Obtained all required permits.

(2) Provided notice of Significant Activity in accordance with Paragraph 2.5(c).

(e) Grantee shall preserve and protect State-Owned Improvements and Improvements Owned by Others, if any.

(f) Grantee shall preserve all legal land subdivision survey markers and witness objects ("Markers.") If disturbance of a Marker will be a necessary consequence of Grantee's construction, Grantee shall reference and/or replace the Marker in accordance with all applicable laws and regulations current at the time, including, but not limited to Chapter 58.24 RCW. At Grantee's expense, Grantee shall retain a registered professional engineer or licensed land surveyor to reestablish destroyed or disturbed Markers in accordance with U.S. General Land Office standards.

(g) Before completing Work, Grantee shall remove all debris and restore the Easement Property, as nearly as possible, to a substantially natural state, except for alterations necessary under the Permitted Use or otherwise authorized by State.

(h) Upon completing Work, Grantee shall promptly provide State with as-built plans and specifications.

7.4 Grantee-Owned Improvements at End of Easement. Grantee-Owned Improvements merge with the Property upon termination of the Easement, unless the Parties agree otherwise.

7.5 Disposition of Unauthorized Improvements.

(a) Unauthorized Improvements belong to State, unless State elects otherwise.

(b) State may either:

(1) Consent to Grantee ownership of the Improvements, or

(2) Charge use and occupancy fee in accordance with RCW 79.105.200 of the Improvements from the time of installation or construction and

(i) Require Grantee to remove the Improvements in accordance with Paragraph 7.3, in which case Grantee shall pay use and occupancy fee for the Improvements until removal,

(ii) Consent to Improvements remaining and Grantee shall pay use and occupancy fee for the use of the Improvements, or

(iii) Remove Improvements and Grantee shall pay for the cost of removal and disposal, in which case Grantee shall pay use and occupancy fee for use of the Improvements until removal and disposal.

SECTION 8 ENVIRONMENTAL LIABILITY/RISK ALLOCATION

8.1 Definitions.

(a) "Hazardous Substance" means any substance that now or in the future becomes regulated or defined under any federal, state, or local statute, ordinance, rule, regulation, or other law relating to human health, environmental protection, contamination, pollution, or cleanup

(b) "Release or threatened release of Hazardous Substance" means a release or threatened release as defined under any law described in Paragraph 8.1(a) or any similar event defined under any such law.

(c) "Utmost care" means the standard of care applicable under MTCA, RCW 70.105D.040.

8.2 General Conditions.

(a) Grantee's obligations under this Section 8 extend to the area in, on, under, or above:

(1) The Easement Property and

(2) Adjacent state-owned aquatic lands where a release or the presence of Hazardous Substances may arise from Grantee's use of the Easement Property.

(b) Standard of Care.

(1) Grantee shall exercise the utmost care with respect to Hazardous Substances.

(2) In relation to the Permitted Use, Grantee shall exercise utmost care for the foreseeable acts or omissions of third parties with respect to Hazardous Substances, and the foreseeable consequences of those acts or omissions.

8.3 Current Conditions and Duty to Investigate.

Grantee is responsible for conducting all appropriate inquiry and gathering sufficient information concerning the Easement Property and the existence, scope, and location of

any Hazardous Substances on the Easement Property or on adjacent lands that allows Grantee to meet Grantee's obligations for sediment remediation.

8.4 Use of Hazardous Substances.

(a) Grantee, its, contractors, agents, employees, guests, invitees, or affiliates shall not use, store, generate, process, transport, handle, release, or dispose of Hazardous Substances, except in accordance with all applicable laws or as authorized by the Regulatory Agency.

(b) Grantee shall not undertake, or allow others to undertake by Grantee's permission, acquiescence, or failure to act, activities that:

(1) Result in a release or threatened release of Hazardous Substances, or

(2) Cause, contribute to, or exacerbate existing contamination.

(c) If use of Hazardous Substance related to the Permitted Use results in a violation of an applicable law:

(1) Grantee shall submit to State any plans for remedying the violation, and

(2) Grantee shall implement any measures State may require to restore the Easement Property in addition to measures required by the Regulatory Agency or other regulatory authorities to remedy the violation.

8.5 Management of Contamination.

(a) Grantee is responsible for management of Permitted Use and any contamination the Permitted Use is intended to remediate.

(b) Grantee is responsible for all monitoring and maintenance of the Permitted Use required by any regulatory authority, order, agreement or decree.

8.6 Notification and Reporting.

(a) Grantee shall immediately notify State if Grantee becomes aware of any of the following:

(1) A release or threatened release of Hazardous Substances;

(2) Any new discovery of or new information about a problem or liability related to, or derived from, the presence of any Hazardous Substance;

(3) Any lien or action arising from the foregoing;

(4) Any actual or alleged violation of any federal, state, or local statute, ordinance, rule, regulation, or other law pertaining to Hazardous Substances;

(5) Any notification from the US Environmental Protection Agency (EPA) or the Washington State Department of Ecology (DOE) that additional remediation or removal of Hazardous Substances is or may be required at the Easement Property.

(b) Grantee's duty to report under Paragraph 8.6(a) extends to the Easement Property, adjacent state-owned aquatic lands where a release or the presence of Hazardous Substances could arise from the Easement Property.

(c) Grantee shall provide State with copies of all documents concerning environmental issues associated with the Easement Property, and submitted by Grantee to any federal, state or local authorities.

8.7 Indemnification.

(a) "Liabilities" as used in this Paragraph 8.7 means any claims, demands, proceedings, lawsuits, damages, costs, expenses, fees (including attorneys' fees and disbursements), penalties, or judgments.

(b) Grantee shall fully indemnify, defend, and hold State harmless from and against any Liabilities that arise out of, or relate to:

(1) The use, storage, generation, processing, transportation, handling, or disposal of any Hazardous Substance by Grantee, its contractors, agents, invitees, guests, employees, affiliates, licensees, or permittees occurring anytime Grantee uses or has used the Easement Property;

(2) The release or threatened release of any Hazardous Substance, or the exacerbation of any Hazardous Substance contamination resulting from any act or omission of Grantee, its contractors, agents, employees, guests, invitees, or affiliates occurring anytime Grantee uses or has used the Easement Property.

(3) Any third party act, error, or omission that causes the release or threatened release of Hazardous Substance contained or remediated by the Permitted Use.

(c) Grantee's indemnification obligations survive termination of the Easement.

8.8 Reservation of Rights.

(a) For any environmental liabilities not covered by the indemnification provisions of Paragraph 8.7, the Parties expressly reserve and do not waive or relinquish any rights, claims, immunities, causes of action, or defenses relating to the presence, release, or threatened release of Hazardous Substances that either Party may have against the other under law.

(b) This Easement affects no right, claim, immunity, or defense either Party may have against third parties, and the Parties expressly reserve all such rights, claims, immunities, and defenses.

(c) The provisions under this Section 8 do not benefit, or create rights for, third parties.

(d) The allocations of risks, liabilities, and responsibilities set forth above do not release either Party from, or affect the liability of either Party for, claims or actions by federal, state, or local regulatory agencies concerning Hazardous Substances or the Permitted Use.

8.9 Additional Cleanup.

(a) If Grantee's act, omission, or breach of obligation under Paragraph 8.4 results in a release of Hazardous Substances, Grantee shall, at Grantee's sole expense, promptly take all actions necessary or advisable to clean up the Hazardous Substances in accordance with applicable law or required by the Regulatory Agency. Cleanup actions include, without limitation, removal, containment, and remedial actions.

(b) Grantee's obligation to undertake a cleanup under Section 8 is limited to those instances where the Hazardous Substances exist in amounts that exceed the threshold limits of any applicable regulatory cleanup standards.

SECTION 9 ASSIGNMENT

Grantee shall not assign any part of Grantee's interest in this Easement or the Easement Property or grant any rights or franchises to third parties without State's prior written consent, which State shall not unreasonably condition or withhold. State reserves the right to reasonably change the terms and conditions of this Easement upon State's consent to assignment.

SECTION 10 INDEMNITY, FINANCIAL SECURITY, INSURANCE

10.1 Indemnity.

(a) Grantee shall indemnify, defend, and hold State, its employees, officers, and agents harmless from any Claims arising out of the Permitted Use or activities related to the Permitted Use by Grantee, its contractors, agents, invitees, guests, employees, affiliates, licensees, or permittees.

(b) "Claim" as used in this Paragraph 10.1 means any financial loss, claim, suit, action, damages, expenses, fees (including attorneys' fees), penalties, or judgments attributable to bodily injury, sickness, disease, death, and damages to tangible property, including, but not limited to, land, aquatic life, and other natural resources. "Damages to tangible property" includes, but is not limited to, physical injury to the Easement Property and damages resulting from loss of use of the Easement Property.

(c) State shall not require Grantee to indemnify, defend, and hold State harmless for claims that arise solely out of the willful or negligent act of State or State's elected officials, employees, or agents.

(d) Grantee waives its immunity under Title 51 RCW to the extent it is required to indemnify, defend, and hold State and its agencies, officials, agents, or employees harmless.

(e) Section 8, Environmental Liability/Risk Allocation, exclusively governs Grantee's liability to State for Hazardous Substances and its obligation to indemnify, defend, and hold State harmless for Hazardous Substances.

10.2 Insurance Terms.

(a) Insurance Required.

(1) At its own expense, Grantee shall procure and maintain during the Term of this Easement, the insurance coverages and limits described in this Paragraph 10.2 and in Paragraph 10.3, Insurance Types and Limits.

(2) Unless State agrees to an exception, Grantee shall provide insurance issued by an insurance company or companies admitted to do business in the State of Washington and have a rating of A- or better by the most

recently published edition of Best's Reports. Grantee may submit a request to the risk manager for the Department of Natural Resources for an exception to this requirement. If an insurer is not admitted, the insurance policies and procedures for issuing the insurance policies must comply with Chapter 48.15 RCW and 284-15 WAC.

(3) The State of Washington, the Department of Natural Resources, its elected and appointed officials, agents, and employees must be named as an additional insured on all general liability, excess, umbrella, property, builder's risk, and pollution legal liability insurance policies.

(4) All insurance provided in compliance with this Easement must be primary as to any other insurance or self-insurance programs afforded to or maintained by State.

(b) Waiver.

(1) Grantee waives all rights against State for recovery of damages to the extent insurance maintained pursuant to this Easement covers these damages.

(2) Except as prohibited by law, Grantee waives all rights of subrogation against State for recovery of damages to the extent that they are covered by insurance maintained pursuant to this Easement.

(c) Proof of Insurance.

(1) Grantee shall provide State with a certificate(s) of insurance executed by a duly authorized representative of each insurer, showing compliance with insurance requirements specified in this Easement and, if requested, copies of policies to State.

(2) The certificate(s) of insurance must reference additional insureds and the Easement number.

(3) Receipt of such certificates or policies by State does not constitute approval by State of the terms of such policies.

(d) State must receive written notice before cancellation or non-renewal of any insurance required by this Easement, in accordance with the following:

(1) Insurers subject to RCW 48.18 (admitted and regulated by the Insurance Commissioner): If cancellation is due to non-payment of premium, provide State ten (10) days' advance notice of cancellation; otherwise, provide State forty-five (45) days' advance notice of cancellation or non-renewal.

(2) Insurers subject to RCW 48.15 (surplus lines): If cancellation is due to non-payment of premium, provide State ten (10) days' advance notice of cancellation; otherwise, provide State thirty (30) days' advance notice of cancellation or non-renewal.

(e) Adjustments in Insurance Coverage.

(1) State may impose changes in the limits of liability for all types of insurance as State deems necessary.

(2) Grantee shall secure new or modified insurance coverage within thirty (30) days after State requires changes in the limits of liability.

(f) If Grantee fails to procure and maintain the insurance described above within fifteen (15) days after Grantee receives a notice to comply from State, State may either:

(1) Deem the failure an Event of Default under Section 14, or

(2) Procure and maintain comparable substitute insurance and pay the premiums. Upon demand, Grantee shall pay to State the full amount paid by State, together with interest at the rate provided in Paragraph 6.2 from the date of State's notice of the expenditure until Grantee's repayment.

(g) General Terms.

(1) State does not represent that coverage and limits required under this Easement will be adequate to protect Grantee.

(2) Coverage and limits do not limit Grantee's liability for indemnification and reimbursements granted to State under this Easement.

(3) The Parties shall use any insurance proceeds payable by reason of damage or destruction to Easement Property first to restore the Easement Property, then to pay the cost of the reconstruction, then to pay the State any sums in arrears, and then to Grantee.

10.3 Insurance Types and Limits.

(a) General Liability Insurance.

(1) Grantee shall maintain commercial general liability insurance (CGL) or marine general liability (MGL) covering claims for bodily injury, personal injury, or property damage arising on the Easement Property and/or arising out of the Permitted Use and, if necessary, commercial umbrella insurance with a limit of not less than One Million Dollars ($1,000,000) per each occurrence. If such CGL or MGL insurance contains aggregate limits, the general aggregate limit must be at least twice the "each occurrence" limit. CGL or MGL insurance must have products-completed operations aggregate limit of at least two times the "each occurrence" limit.

(2) CGL insurance must be written on Insurance Services Office (ISO) Occurrence Form CG 00 01 (or a substitute form providing equivalent coverage). All insurance must cover liability arising out of premises, operations, independent contractors, products completed operations, personal injury and advertising injury, and liability assumed under an insured contract (including the tort liability of another party assumed in a business contract) and contain separation of insured (cross-liability) condition.

(3) MGL insurance must have no exclusions for non-owned watercraft.

(b) Workers' Compensation.

(1) State of Washington Workers' Compensation.

(i) Grantee shall comply with all State of Washington workers' compensation statutes and regulations. Grantee shall provide workers' compensation coverage for all employees of Grantee. Coverage must include bodily injury (including death) by accident

or disease, which arises out of or in connection with the Permitted Use or related activities.

(ii) If Grantee fails to comply with all State of Washington workers' compensation statutes and regulations and State incurs fines or is required by law to provide benefits to or obtain coverage for such employees, Grantee shall indemnify State. Indemnity includes all fines; payment of benefits to Grantee, employees, or their heirs or legal representatives; and the cost of effecting coverage on behalf of such employees.

(2) Longshore and Harbor Workers' Act. The Longshore and Harbor Workers' Compensation Act (33 U.S.C. Section 901 *et. seq.*) may require Grantee to provide insurance coverage for longshore and harbor workers other than seaman. Failure to obtain coverage in the amount required by law may result in civil and criminal liabilities. Grantee is fully responsible for ascertaining if such insurance is required and shall maintain insurance in compliance with this Act. Grantee is responsible for all civil and criminal liability arising from failure to maintain such coverage.

(3) Jones Act. The Jones Act (46 U.S.C. Section 688) may require may require Grantee to provide insurance coverage for seamen injured during employment resulting from negligence of the owner, master, or fellow crew members. Failure to obtain coverage in the amount required by law may result in civil and criminal liabilities. Grantee is fully responsible for ascertaining if such insurance is required and shall maintain insurance in compliance with this Act. Grantee is responsible for all civil and criminal liability arising from failure to maintain such coverage.

(c) Employer's Liability Insurance. Grantee shall procure employer's liability insurance, and, if necessary, commercial umbrella liability insurance with limits not less than One Million Dollars ($1,000,000) each accident for bodily injury by accident or One Million Dollars ($1,000,000) each employee for bodily injury by disease.

10.4 Financial Security.

Grantee shall procure and maintain during the Term of this Easement, a security bond or other financial security, enforceable by State, that secures Grantee's performance of activities related to Permitted Use in the form and amount required by the Regulatory Agency.

SECTION 11 ROUTINE MAINTENANCE AND REPAIR

11.1 State's Repairs. This Easement does not obligate State to make any alterations, maintenance, replacements, or repairs in, on, or about the Easement Property, during the Term.

11.2 Grantee's Repairs and Maintenance.

(a) Routine maintenance and repair are acts intended to prevent a decline, lapse or, cessation of the Permitted Use.

(b) At Grantee's sole expense, Grantee shall keep and maintain all Grantee-Owned Improvements and the Easement Property as it relates to the Permitted Use in good order and repair and in a safe condition in accordance with any directives from the Regulatory Agency or any order, agreement, or decree. State's consent is not required for routine maintenance or repair.

(c) At Grantee's own expense, Grantee shall make any additions, repairs, alterations, maintenance, replacements, or changes to the Easement Property or to any Improvements on the Easement Property that any public authority requires because of the Permitted Use.

(d) Upon completion of maintenance activities, Grantee shall remove all debris and restore the Easement Property, as nearly as possible, to the condition prior to the commencement of work.

SECTION 12 DAMAGE OR DESTRUCTION

12.1 Notice and Repair.

(a) In the event of any known damage to or destruction of the Easement Property or any Improvements, Grantee shall promptly give written notice to State. State does not have actual knowledge of the damage or destruction of the Easement Property or any Improvements without Grantee's written notice.

(b) Grantee shall promptly reconstruct, repair, or replace any Improvements in accordance with any directive from the Regulatory Agency and Paragraph 7.3, Construction, Major Repair, Modification, and Demolition, as nearly as possible to its condition immediately prior to the damage or destruction.

12.2 State's Waiver of Claim. State does not waive any claims for damage or destruction of the Easement Property unless State provides written notice to Grantee of each specific claim waived.

12.3 Insurance Proceeds. Grantee's duty to reconstruct, repair, or replace any damage or destruction of the Easement Property or any Improvements on the Easement Property is not conditioned upon the availability of any insurance proceeds to Grantee from which the cost of repairs may be paid. The Parties shall use insurance proceeds, if any, in accordance with Paragraph 10.2(g)(3).

SECTION 13 DEFAULT AND REMEDIES

13.1 Default Defined. Grantee is in default of this Easement on the occurrence of any of the following:

(a) Failure to comply with any order, decree, or agreement issued by the Regulatory Agency to the Grantee in connection with the Permitted Use.

(b) Failure to comply with any law, regulation, policy, or order of any lawful governmental authority in connection with the Permitted Use;

(c) Failure to comply with any provision of this Easement.

13.2 Cure Period. State shall provide Grantee written notice of breach. Grantee shall have sixty (60) days after receiving notice to cure. State may extend the cure period if breach is not reasonably capable of cure within sixty (60) days.

13.3 State's Damages. Grantee is responsible for any damages that State incurs as a result of Grantee's default.

13.4 Specific Performance. State's remedies at law for Grantee's failure to comply with any order, decree, or agreement issued by the Regulatory Agency to the Grantee in connection with the Permitted Use are inadequate and State is entitled to injunctive relief, both prohibitive and mandatory, in addition to such other relief to which State may be entitled, including specific performance of the terms of this Easement, without the necessity of proving either actual damages or the inadequacy of otherwise available legal remedies.

SECTION 14 TERMINATION

This Easement terminates in accordance with Section 3 or by mutual agreement of the Parties.

SECTION 15 NOTICE AND SUBMITTALS

15.1 Notice. Following are the locations for delivery of notice and submittals required or permitted under this Easement. Any Party may change the place of delivery upon ten (10) days written notice to the other.

State: DEPARTMENT OF NATURAL RESOURCES
Aquatic Resources Division – Ports Management Program
1111 Washington St SE MS 47027
Olympia, WA 98504-7027

Grantee: PORT OF RIDGEFIELD
PO Box 55
Ridgefield, WA 98642

The Parties may deliver any notice in person, by facsimile machine, or by certified mail. Depending on the method of delivery, notice is effective upon personal delivery, upon receipt of a confirmation report if delivered by facsimile machine, or three (3) days after mailing. All notices must identify the Easement number. On notices transmitted by facsimile machine, the Parties shall state the number of pages contained in the notice, including the transmittal page, if any.

15.2 Contact Persons. On the Commencement Date, the following persons are designated day-to-day contact persons. Any Party may change the Contact Person upon reasonable notice to the other.

State: Don Olmsted, Ports Program Manager
360-902-1071
360-902-1786
don.olmsted@dnr.wa.gov

Grantee: Brent Grening, Executive Director
360-887-3873
360-887-3403
bgrening@portridgefield.org

SECTION 16 MISCELLANEOUS

16.1 Authority. Grantee and the person or persons executing this Easement on behalf of Grantee represent that Grantee is qualified to do business in the State of Washington, that Grantee has full right and authority to enter into this Easement, and that each and every person signing on behalf of Grantee is authorized to do so. Upon State's request, Grantee shall provide evidence satisfactory to State confirming these representations. This Easement is entered into by State pursuant to the authority granted it in Chapter 43.12 RCW, Chapter 43.30 RCW, and Title 79 RCW and the Constitution of the State of Washington.

16.2 Successors and Assigns. This Easement binds and inures to the benefit of the Parties, their successors, and assigns.

16.3 Headings. The headings used in this Easement are for convenience only and in no way define, limit, or extend the scope of this Easement or the intent of any provision.

16.4 Entire Agreement. This Easement, including the exhibits and addenda, if any, contains the entire agreement of the Parties. This Easement merges all prior and contemporaneous agreements, promises, representations, and statements relating to this transaction or to the Easement Property.

16.5 Waiver. The waiver of any breach or default of any term, covenant, or condition of this Easement is not a waiver of such term, covenant, or condition; of any subsequent breach or default of the same; or of any other term, covenant, or condition of this Easement. State's acceptance of payment is not a waiver of any preceding or existing breach other than the failure to pay the particular payment that was accepted.

16.6 Cumulative Remedies. The rights and remedies of State under this Easement are cumulative and in addition to all other rights and remedies afforded by law or equity or otherwise.

16.7 Time is of the Essence. TIME IS OF THE ESSENCE as to each and every provision of this Easement.

16.8 Language. The word "Grantee" as used in this Easement applies to one or more persons, as the case may be. The singular includes the plural, and the neuter includes the masculine and feminine. If there is more than one Grantee, their obligations are joint and several. The word "persons," whenever used, includes individuals, firms, associations, and corporations. The word "Parties" means State and Grantee in the collective. The word "Party" means either or both State and Grantee, depending on context.

16.9 Invalidity. The invalidity, voidness, or illegality of any provision of this Easement does not affect, impair, or invalidate any other provision of this Easement.

16.10 Applicable Law and Venue. This Easement is to be interpreted and construed in accordance with the laws of the State of Washington. Any reference to a statute means that statute as presently enacted or hereafter amended or superseded. Venue for any action arising out of or in connection with this Easement is in the Superior Court for Thurston County, Washington.

16.11 Recordation. Grantee shall record this Easement or a memorandum documenting the existence of this Easement in the county in which the Easement Property is located, at Grantee's sole expense. If used, the memorandum must contain the Easement Property description, the names of the Parties to the Easement, the State's Easement number, and the duration of the Easement. Grantee shall provide State with recording information, including the date of recordation and file number. Grantee has thirty (30) days from the date of delivery of the final executed agreement to comply with the requirements of this Paragraph 16.11. If Grantee fails to record this Easement, State may record it and Grantee shall pay the costs of recording upon State's demand.

16.12 Modification. No modification of this Easement is effective unless in writing and signed by the Parties. Oral representations or statements do not bind either Party.

16.13 Survival. Any obligations of Grantee not fully performed upon termination of this Easement do not cease, but continue as obligations of the Grantee until fully performed.

16.14 Exhibits. All referenced exhibits are incorporated in this Easement unless expressly identified as unincorporated.

THIS AGREEMENT requires the signature of all Parties and is effective on the date of the last signature below.

PORT OF RIDGEFIELD

Dated: 9·25, 2014

By: Brent Grening
Title: Executive Director
Address: PO Box 55
Ridgefield, WA 98642
Phone: 360-887-3873

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

Dated: 9-25 9/29, 2014

By: Megan Duffy
Title: Deputy Supervisor for Aquatics and Geology
Address: 1111 Washington Street SE MS 47027
Olympia, WA 98504-7027

Approved as to Form this
24th day of September 2014
Terence A. Pruit, Assistant Attorney General

REPRESENTATIVE ACKNOWLEDGMENT

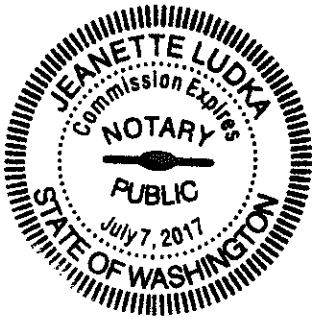
STATE OF WASHINGTON)
) ss
County of Clark)

I certify that I know or have satisfactory evidence that BRENT GRENING is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the Executive Director of the PORT OF RIDGEFIELD to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: 9-25-14

Jeanette Ludka
(Signature)

(Seal or stamp)



JEANETTE LUDKA
(Print Name)

Notary Public in and for the State of Washington, residing at

Clark County

My appointment expires
7-7-17

STATE ACKNOWLEDGMENT

STATE OF WASHINGTON)
) ss
County of Thurston)

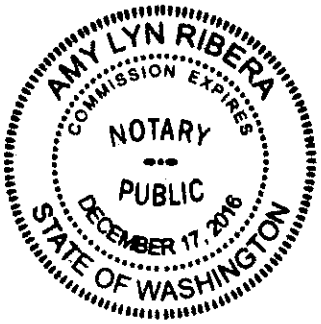
On this 29 day of Sep, 2014, personally appeared before me MEGAN DUFFY, the Deputy Supervisor for Aquatics and Geology for the Department of Natural Resources of the State of Washington, the department that executed the within and foregoing instrument on behalf of the State of Washington, and acknowledged said instrument to be the free and voluntary act and deed of the State of Washington for the uses and purposes therein mentioned, and on oath stated that she was authorized to execute said instrument for the State of Washington.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

Dated: 9.29.14

(Signature)

(Seal or stamp)



AmyLyn Ribera
(Print Name)

Notary Public in and for the State of Washington, residing at

Olympia

My appointment expires
12.17.16

EXHIBIT A

Existing Surveys

The State-owned aquatic lands subject to this Easement are tidelands and bedlands excluding those areas subject to Aquatic Lands Leases numbered 20-A09196, 20-A12902, 20-A09947. Surveys associated with those agreements are recorded with the Clark County Auditor.

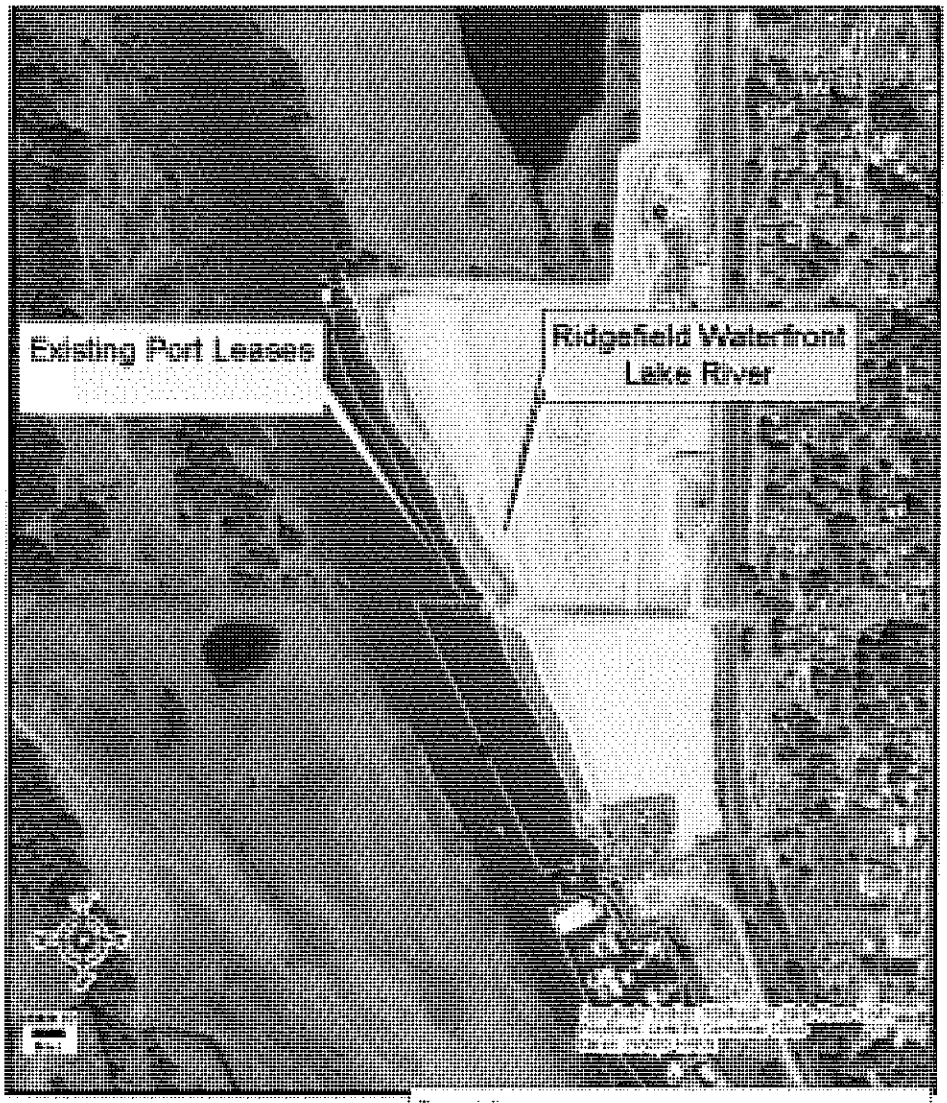
Graphic Exhibits

The attached graphic exhibits show:

Attachment 1: Boundaries of the existing Lease Agreements

Attachment 2: Cleanup boundaries

Port of Ridgefield
Easement for Remediation



VICINITY MAP

Description:

ATTACHMENT 2 TO EXHIBIT A

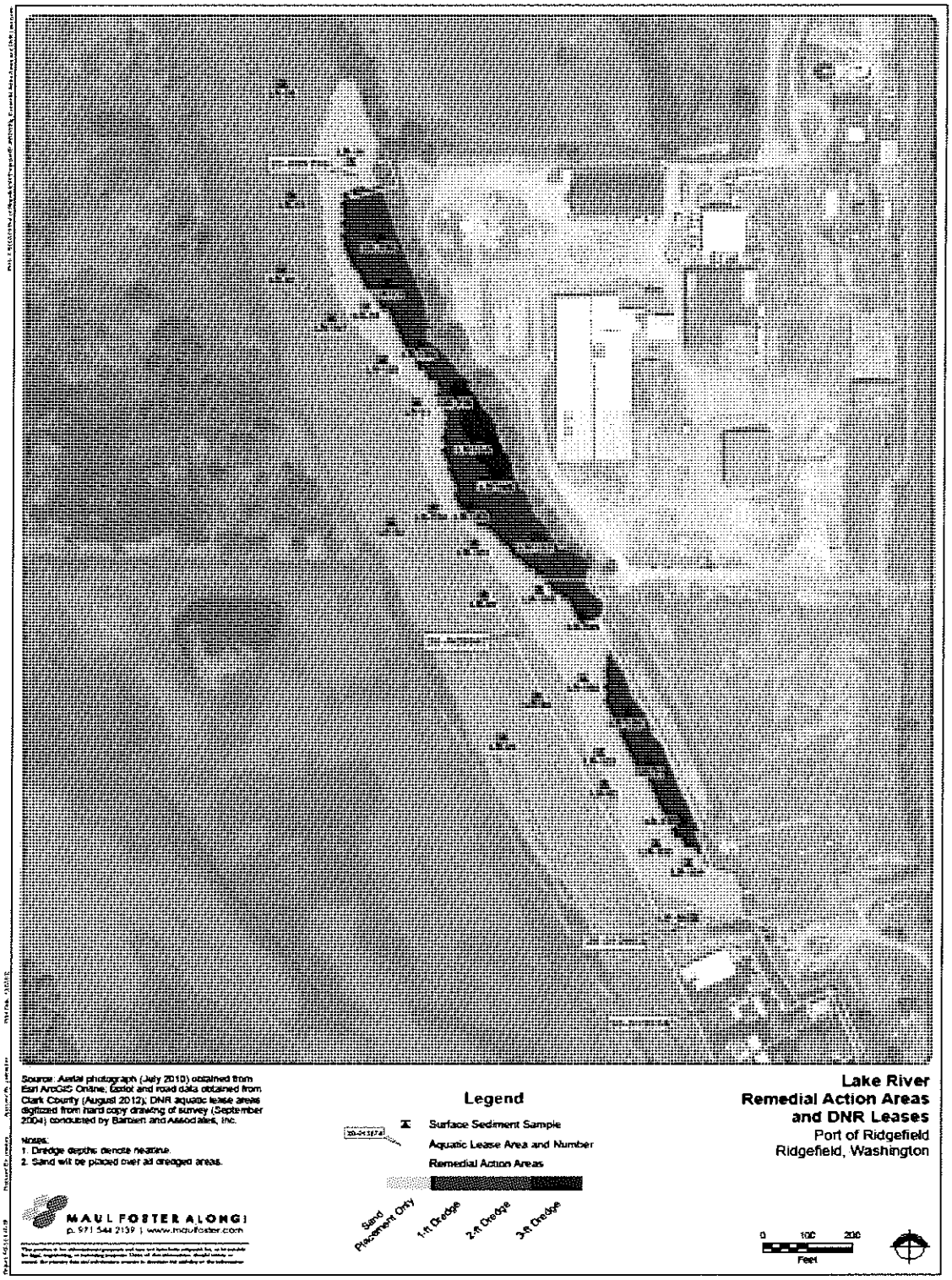


EXHIBIT B

1. DESCRIPTION OF PERMITTED USE

A. **Existing Facilities.** The State-owned aquatic lands subject to this Easement are tidelands and bedlands abutting the existing Aquatic Lands Leases numbered 20-A09196, 20-A12902, and 20-A09947.

B. **Proposed Facilities.** Contaminated sediments will be removed and clean material will be deposited in accordance with the Consent Decree and Cleanup Action Plan referenced below and available at the Grantee's address.

2. CLEANUP SUBJECT TO THE FOLLOWING AGREEMENTS

Ecology. 2013. **Cleanup Action Plan**, former Pacific Wood Treating Co. site. Washington State Department of Ecology. November 5.

Ecology. 2013. **Consent Decree No. 13-2-03830-1**, former Pacific Wood Treating Co. site. Washington State Department of Ecology. November 15.

3. PROJECT JARPA AND DESCRIPTION DOCUMENTS - Available at Grantee's address.

JARPA, Lake River Remedial Action, Sept. 23, 2013

LAKE RIVER 90% REMEDIAL DESIGN REPORT, LAKE RIVER REMEDIAL ACTION, PORT OF RIDGEFIELD, March 3, 2014, Project No. 9003.01.40, Prepared by Maul Foster & Alongi, Inc., 400 E Mill Plain Blvd., Suite 400, Vancouver WA 98660

May 21, 2014

Ms. Joyce Mercuri, Site Manager (Sediments)
Southwest Regional Office, Toxics Cleanup Program
WA Department of Ecology
PO Box 47775
Olympia, WA 98504-7775

Re: Port of Ridgefield Lake River and Carty Lake Dredging – Substantive Local Requirements

Dear Ms. Mercuri:

This letter is written in response to the Port of Ridgefield's proposal to dredge and clean contaminated sediments from Lake River and Carty Lake during the summer of 2014 as part of the Pacific Wood Treating cleanup program.

The City met in consultation with your office and with representatives of the Port of Ridgefield in the fall of 2013. On January 3, 2014 the City provided your office with a letter describing the substantive city requirements applicable to the Lake River and, by extension, the Carty Lake dredging projects described in the Washington State JARPA Form for the Carty Lake Remedial Action and the Lake River Remedial Action. On April 4, 2014 the Department of Ecology issued a SEPA Determination of Nonsignificance relative to the two remediation projects. The public comment period closed on April 25, 2014 and the threshold determination was not altered or appealed.

The City has reviewed the SEPA checklists for both projects. The City also reviewed the SEPA checklist attachments:

- Department of Ecology, SEPA Determination for Carty Lake Remedial Action, Pacific Wood Treatment Site, Substantive Requirements of Local and State Permits, City of Ridgefield Permits and Washington Department of Fish and Wildlife Hydraulic Project Approval, and
- Department of Ecology, SEPA Determination for Lake River Remedial Action, Pacific Wood Treatment Site, Substantive Requirements of Local and State Permits, City of Ridgefield Permits and Washington Department of Fish and Wildlife Hydraulic Project Approval.

It is the City's opinion that the applicant has demonstrated that its proposals will meet the substantive requirements of the applicable Ridgefield Development Regulations and Ridgefield Shoreline Master Program.

Prior to commencement of work, the City requests, that the applicant provide the Department of Public Works with construction specifications and engineering and erosion control plans, consistent with RMC 18.755 and the City of Ridgefield Standards for Public Works Construction (Standards), Volumes 1-3. If the transport of dredging equipment or materials over Mill or Division Streets causes the condition of a street to fall below City standards, the applicant shall be responsible to restore the portions of the subject streets damaged or degraded by transport of equipment or dredging materials to City standards.

Please contact me directly if you have any additional questions.

Sincerely,

Eric Eisemann

Consulting Ridgefield Planner
e.eisemann@e2landuse.com
360.750.0038

WAC 197-11-970
DETERMINATION OF NONSIGNIFICANCE
LAKE RIVER SEDIMENT REMEDIATION
RIDGEFIELD, WA

Description of proposal:

Under a Consent Decree between the Department of Ecology (Ecology), Port of Ridgefield (Port), and City of Ridgefield, the Port proposes to remediate contaminated sediments in Lake River offshore of the Port's property at 111 Division Street in Ridgefield, Clark County, Washington. Lake River is a tidally influenced tributary emanating from Vancouver Lake and discharging to the Columbia River via Bachelor Slough. The sediment remediation is part of the cleanup of the Pacific Wood Treating toxic cleanup site in Ridgefield, Washington. Sediments in the river became contaminated from operations of the former Pacific Wood Treating company, which operated from 1964 to 1993.

The purpose of the remedial action is to reduce risks to humans and the environment resulting from the presence elevated levels of chlorinated dibenzo-p-dioxins and dibenzofurans (dioxins). The remedial action was selected by Ecology in accordance with the Model Toxics Control Act, Washington Administrative Code 173-340-380. The design for and the basis of the remedial action are provided in the Pacific Wood Treating Cleanup Action Plan from November 5, 2013.

The selected cleanup for Lake River includes:

- Demolishing some in-water structures, removing pilings, and removing in-water and shoreline debris.
- Constructing a staging and sediment handling area on the upland close to the dredging area.
- Removing the most contaminated sediments using precision mechanical dredging.
- Water quality monitoring during in-water activities.
- Transporting and disposing of contaminated sediments at a regulated landfill.
- Placing clean sands over dredged areas to control residual materials generated from the dredging process and to enhance the process of natural recovery.
- Placing clean sands over areas with lower contamination (but above cleanup levels), outside of the dredging zone.
- Placing filter fabric and a stabilization layer consisting of rounded gravels and cobbles resistant to erosion between the toe of the beach slope to approximately Ordinary High Water along the site shoreline. Turf reinforcement mats will be placed on the bank above the fish mix to protect against erosion during high water events.
- Implementing a Riparian Enhancement Plan to provide native vegetation along the embankment slopes and top of the bank.
- Treating, monitoring, and discharging to Lake River of water from the dredging process.
- In-water work will be performed under the U.S. Army Corps of Engineers, Nationwide Permit #38.

Project proponent:
Port of Ridgefield, under Consent Decree with Ecology (Consent Decree No. 13-2-03830-1, filed in Clark County Superior Court, November 5, 2013).

Location of proposal
Lake River adjacent to Port property located at 111 Division Street, Ridgefield, WA 98642.

Lead Agency
Washington State Department of Ecology

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030 (2)(c). This decision was made after review of a completed environmental checklist and other information on file with Ecology. This information is available to the public on request.

Compliance with requirements of local and state permits
Because the project is being completed under a Model Toxics Control Act Consent Decree, the Port is not required to obtain local or state permits that would otherwise be required for this type of work. However, Ecology must ensure that the project meets the substantive requirements of local and state permits. The SEPA checklist describes the substantive requirements for local and state permits.

☐ There is no comment period for this DNS.

☐ This DNS is issued after using the optional DNS process in WAC 197-11-355. There is no further comment period on the DNS.

☒ This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 14 days from the date below. Comments must be submitted by April 25, 2014.

Comments should be directed to Joyce Mercuri, Site Manager, at Joyce.Mercuri@ecy.wa.gov, or P. O. Box 47775, Olympia, WA 98504-7775

Responsible official: Rebecca Lawson, P.E., LHG
Position/title: Section Manager, Toxic Cleanup Program/Southwest Regional Office, WA State Department of Ecology
Phone: (360) 407-6241
Address: P.O. Box 47775, Olympia, WA 98504-7775

Date 4/16/14 Signature Rebecca S. Lawson

SEPA Environmental Checklist
Pacific Wood Treating Cleanup Action Plan

WAC 197-11-960 Environmental checklist.

A. BACKGROUND

1. Name of proposed project, if applicable:

Lake River Remedial Action

2. Name of applicant:

Port of Ridgefield

3. Address and phone number of applicant and contact person:

Brent Grening, Executive Director
Port of Ridgefield
PO Box 55
111 W. Division Street
Ridgefield, WA 98642
Tel: (360) 887-3873

4. Date checklist prepared:

April 1, 2014

5. Agency requesting checklist:

Washington State Department of Ecology (Ecology)

6. Proposed timing or schedule (including phasing, if applicable):

The Port anticipates proceeding with staging area construction in summer of 2014 and the Lake River remedial action (sediment dredging and bank stabilization) during the in-water work window of October 1, 2014 through January 15, 2015.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

The former PWT site includes the Port of Ridgefield Lake River Industrial Site (LRIS), now known as Miller's Landing. The current in-water remedial action is part of the larger cleanup being conducted by the Port of Ridgefield at the former Pacific Wood Treating Co. (PWT) site. Cleanup is being conducted according to the requirements of the Cleanup Action Plan (CAP), within the November 5, 2013 Consent Decree (No. 13-2-03830-1) between Department of Ecology, Port of Ridgefield, and City of Ridgefield. The majority of the upland cleanup on the LRIS has been completed. Future development activities at the LRIS after this cleanup action are described in the Port of Ridgefield 2008 Comprehensive Scheme of Harbor Improvements.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

Substantial environmental documentation has been prepared for the LRIS regarding the soil, groundwater, and sediment contamination caused by a former Port tenant, Pacific Wood Treating Co.

Applicable to this requested action, a Remedial Investigation/Feasibility Study has been prepared and accepted by Ecology. A CAP describing required cleanup actions was issued by Ecology as an attachment to the Consent Decree. A pre-design sampling report and draft engineering report were also submitted to Ecology.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

The Port has applied for a U.S. Army Corps of Engineers permit for dredging of sediment within Carty Lake, which is adjacent to Port property. The Carty Lake project will include a temporary access road across the Port property, construction of a gravel access ramp between the LRIS and Carty Lake and, construction of the sediment handling area discussed in this checklist. The Port has also acquired permits for future development. The current action is discrete from the future development; however, conditions of the future development permits incorporate remedial actions.

10. List any government approvals or permits that will be needed for your proposal, if known.

Clean Water Act Section 404 permit and Section 10 Rivers and Harbors Act authorization—U.S. Army Corps of Engineers (COE). The Port submitted a Joint Aquatic Resources Permit Application (JARPA) to the COE for the Section 404 Permit on September 23, 2013. The COE determined that a Nationwide Permit #38 applies to this project as it will be conducted under a Consent Decree. The COE established an in-water work window of October 1, 2014 through January 15, 2015.

National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit—Ecology. The Port is preparing the application for the construction stormwater general permit to submit to Ecology. This application will include a site-specific stormwater pollution prevention plan.

Right of Entry—Washington State Department of Natural Resources (DNR). The Port provided DNR with the JARPA on September 23, 2013.

Endangered Species Act (ESA) and Magnuson-Stevens Fishery Conservation and Management Act consultation—National Oceanic and Atmospheric Administration Fisheries Service (NOAA-Fisheries). On November 20, 2013, the COE requested an informal consultation by NOAA-Fisheries under Section 7 of the ESA and the Magnuson-Stevens Fishery Conservation Act. The COE determined that the proposed project "may affect, not likely to adversely affect" ESA-listed species. As of this writing, NOAA-Fisheries has not issued a finding for this project.

Demonstration of compliance with the National Historic Preservation Act through coordination with COE and Washington State Department of Archaeology and Historic Preservation (DAHP). The COE has engaged DAHP and affected tribes. The remedial action likely will be conducted under a cultural resources monitoring plan. State compliance will be addressed through federal permitting requirements.

Consistent with MTCA requirements for remedial actions conducted under a Consent Decree (WAC 173-340-710(9)(b)), the project is exempt from the procedural requirements of certain local and state laws, permits, and approvals. Ecology has solicited substantive requirements that will be met for Hydraulic Project Approval from Washington Fish and Wildlife and for City of Ridgefield Shoreline Management permits. Substantive requirements for Water Quality Certification from Ecology will be met (see the Attachment for local and state substantive requirements). The Port will obtain a City of Ridgefield grading/erosion control permit.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The project involves dredging contaminated sediment in areas exceeding remediation levels, with placement of clean sand to enhance the recovery of low-level contamination, and bank stabilization. Existing in-water structures will be removed prior to dredging. These include remnants of infrastructure from historical LRIS river operations such as dolphins, pilings, and a dock. The pilings may be replaced upon completion of the remedy. The dredging and bank areas consists of approximately 13.3 acres: 4.5 acres above jurisdictional ordinary high water (OHW) of 14 feet National Geodetic Vertical Datum of 1929 (NGVD) and 8.8 acres below OHW.

Dredging and ENR Placement

Dredging in a maximum 3.3 acre area will be conducted in a manner that minimizes contaminant release/resuspension and formation of residuals using a method that limits turbidity in Lake River and the potential

for off-site release of contaminants. Debris booms and a supporting work boat will be deployed when existing structures and debris are being removed from the waterway. The boom and boat will capture any debris freed during the removal process for disposal. All fueling of marine equipment will take place within a floating sorbent boom or over sorbent pads away from the edge of the barges and derricks. Fueling will be performed in a manner that will not result in a release to the waterway.

Clean sand for enhanced natural recovery (ENR) will be placed over approximately 7.0 acres in Lake River by mechanical means, using a barge-mounted crane and clamshell bucket. Conservative estimates indicate that after dredging, mixing of the ENR sand layer with the remaining sediment will effectively lower the surficial concentrations of contamination to meet cleanup levels.

Best management practices (BMPs) for water quality will be implemented during construction activities and all in-water construction activities will be monitored consistent with an Ecology-approved water quality monitoring plan. Water generated from the dredging operation will be treated in an upland water treatment facility constructed for that purpose, and discharged back to Lake River.

Bank Treatment

The Lake River project involves bank stabilization and removal of degraded in-water and over-water structures. The Lake River bank within the project area will be covered with a geotextile filter fabric and a fish mix rock stabilization layer from approximately elevation +11 National Geodetic Vertical Datum of 1929/1947 (NGVD) (and up to +18 NGVD in certain areas) to the toe of the bank slope (covering approximately 2.8 acres total). Turf reinforcement mat (TRM) will be placed above the fish mix layer to protect against erosion during high water events. Where the bank treatment work intersects with the existing upland soil cap, measures will be taken to preserve the integrity of the cap and to repair/replace any areas that are disturbed. The new embankment will be planted with native vegetation according to a Riparian Enhancement Plan approved by the COE.

Where possible, the design includes elements to reflect a more natural appearance and to provide greater habitat value. Additional benefits will include: removal of nonnative, invasive, noxious plants from the project site; improved habitat for benthic aquatic organisms; improved public access to nearshore areas; and more aesthetically pleasing views of the shoreline. .

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The project is located in and adjacent to Lake River and on the Port of Ridgefield upland and Department of Natural Resources aquatic land. It can be reached from the Port of Ridgefield property located at 111 Division St in Ridgefield, Washington. The LRIS property is located in the northwest quarter and northeast quarter of section 24, township 4 north, range 1 west of the Willamette Meridian.

Please refer to the site figure included with this SEPA Checklist.

B. ENVIRONMENTAL ELEMENTS

1. **Earth**

a. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other . . . . Sloped shoreline relatively flat river bottom

b. What is the steepest slope on the site (approximate percent slope)?

100% slope, on some sections of the embankment.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

Native silt with some sand and rock from historic fill

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

Some erosion along shore embankment

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

Approximately 10,500 cubic yards of soil will be removed from a 2 acre area for construction of the sediment handling and staging area (to be conducted in Summer of 2014 in association with the related Carty Lake Dredging project). Soils to be removed will be placed in a covered stockpile on the LRIS. The soil will be replaced at the end of the project and the area will be stabilized with straw mulch and seeded.

Clean fill will be placed on the shoreline up to elevation +18 NGVD. As described above, the purpose of the fill is to contain contaminated soils on the Lake River shoreline, and to stabilize the bank from erosion. A maximum of 14,000 cubic yards of preferred gravel substrates mixed with larger river cobbles, referred to as fish mix, will be placed at a minimum of 2 feet thick on the lower bank with a final slope of no greater than 4H:1V. Fish mix will be sourced from a local quarry. A maximum of 13,000 cubic yards of clean sand will be placed in a 1 foot layer over all dredged areas as well as areas of low level contamination. Sand is likely to be sourced from the Columbia River mid-channel maintenance dredge sand and will be analyzed for the standard list of sediment evaluation framework chemicals of concern and dioxins to confirm that the material is not contaminated.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Best management practices will be employed to ensure that erosion does not occur as a result of clearing, construction or use. The project is intended to reduce the possibility of erosion by adding the fish mix rock stabilization layer over the existing bank, resulting in a more gradual slope as well as capping some bank soils with turf reinforcement mat (TRM) as appropriate. Debris removal will occur only within the in-water portions of the project area. No activities that would generate erosion are anticipated above OHW.

A temporary upland construction staging area will be constructed within the LRIS. This staging area will be configured in compliance with the applicable Washington State Erosion Control standard(s).

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

None

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Erosion control will be provided as needed, following the applicable Washington State standards and requirements of the Construction Stormwater General NPDES Permit.

2. Air

a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

Short-term air emissions are expected to be limited to diesel and gasoline engine emissions from heavy equipment used for dredging, placement, and disposal of material. No long-term emissions form this proposed action will occur.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No. Sources of air emissions in the project area include vehicle and boat traffic. These emissions will not affect the proposal.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

No impacts to air quality are anticipated as a result of this project, therefore no measures to control emissions are proposed.

3. Water

a. Surface:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

The project is located on the Lake River shoreline and in Lake River.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

The project will require work over and in Lake River and on the shoreline of Lake River. A project description has been provided in Section A 11, above.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

The project will remove approximately 14,000 cubic yards of material through dredge activities in Lake River. A maximum of 13,000 cubic yards of clean Columbia River Center Channel dredge sand will be placed in an approximately 1-foot layer over areas dredged (to manage residuals) and over areas exceeding cleanup levels. A maximum of 14,000 cubic yards of fish mix will be placed from the bottom of the bank slope up to the ordinary high water line (at a minimum) for bank stabilization.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

The project will not require surface water withdrawal or diversion.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

The project lies entirely within the floodplain. Please refer to the attached Figure.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

The proposed project does not involve discharge of waste material to surface water. Precision dredging best management practices, including use of a closed dredge bucket, will be employed to eliminate potential for discharge of dredged sediments to water. Water generated from the dredging process will be treated and monitored consistent with the Ecology-approved water quality plan.

b. Ground:

1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.

No. The in-water work will not result in the withdrawal of or discharge to the groundwater.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

No waste material will be discharged in the groundwater. No septic or sewage system is proposed.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Water will be generated by the dredging process. Water will be collected and treated for turbidity and organic contaminants by an onsite water treatment system prior to discharge back into Lake River and will meet substantive water quality requirements. A sediment handling and dewatering area will be constructed on an upland portion of the LRIS. Any stormwater that collects within the sediment handling and dewatering area will not run off from the handling area but will be treated by the onsite water treatment system prior to discharge into Lake River.

2) Could waste materials enter ground or surface waters? If so, generally describe.

The purpose of the planned project is to ensure that contaminated sediments are removed from the river. Adherence to substantive water quality requirements will limit the transport of contaminated materials in surface water. Precision dredging best management practices, including use of a closed dredge bucket, will be employed to eliminate potential for discharge of dredged sediments to water. Water generated from the dredging process will be treated and monitored consistent with the Ecology-approved water quality plan.

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

Fish mix will be added to the bank from at or above the ordinary high water line down the slope to provide long-term stability and erosion control. TRM will be placed above the fish mix layer to the existing gravel trail to protect against erosion during high water events. No excavation is planned for the bank work; however, during construction of the bank stabilization components, care will be taken, through use of plastic sheeting, mulch, straw, and/or other acceptable measures, to protect any disturbed areas from resulting in sediment-laden water, loose soil, or other materials from being discharged to Lake River. A stormwater pollution prevention plan will be developed in accordance with the requirements of the Construction Stormwater General NPDES permit.

*4. **Plants***

a. Check or circle types of vegetation found on the site:

X *deciduous tree: alder, maple, aspen, other*

____ *evergreen tree: fir, cedar, pine, other*

X *shrubs*

X *grass*

____ *pasture*

____ *crop or grain*

X *wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other*

____ *water plants: water lily, eelgrass, milfoil, other*

____ *other types of vegetation*

b. What kind and amount of vegetation will be removed or altered?

All existing vegetation will be removed as result of dredging and bank stabilization activities. As described in the January 17, 2014 Revised Lake River Riparian Enhancement Plan, existing vegetation is primarily non-native. Native plantings are proposed following remedial work, and will provide the COE-required compensation (2:1 mitigation ratio based on lineal feet) for unavoidable impacts to aquatic resources, including existing vegetation.

c. List threatened or endangered species known to be on or near the site.

No federally listed threatened or endangered plant species are expected to occur within the project area during project activities, based on the Lake River Biological Evaluation submitted as part of the JARPA. The COE determined that the proposed project "may affect, not likely to adversely affect" ESA-listed fish species.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Landscaping is not currently proposed in Lake River or on the bank below ordinary high water. Native tree and shrub plantings in the riparian habitat above ordinary high water will span approximately 500 lineal feet, and the remainder will be planted with native grasses, as described in the January 17, 2014 Revised Lake River Riparian Enhancement Plan.

*5. **Animals***

a. Circle any birds and animals which have been observed on or near the site or are known to be on or near the site:

birds: hawk, heron, eagle, songbirds, <u>other</u>: various songbirds, raptors, and waterfowl are common in the area due to the proximity of the high-quality habitat in the Ridgefield National Wildlife Refuge

mammals: <u>deer</u>, bear, elk, beaver, <u>other</u>: mink, river otter, opossum, coyote, and raccoons

fish: <u>bass, salmon, trout</u>, herring, shellfish, <u>other</u>: carp

b. List any threatened or endangered species known to be on or near the site.

Species federally listed as threatened or endangered that may occur in or near the project area include Columbian white-tailed deer, steelhead (rainbow trout), chinook salmon, coho salmon, chum salmon, sockeye salmon, and Pacific smelt (Eulachon). Federally designated Pacific salmon and eulachon critical habitat is identified for Lake River and/or the nearby Columbia River mainstem.

c. Is the site part of a migration route? If so, explain.

The LRIS is in the generally defined Pacific Flyway for migrating birds, a broad migratory corridor that extends from Alaska to Baja California. The property is also in close proximity to the Ridgefield National Wildlife Refuge.

d. Proposed measures to preserve or enhance wildlife, if any:

The currently proposed remedial action has been designed to reduce adverse impacts to environmental health through exposure to toxic substances currently in the Lake River project area.

*6. **Energy and natural resources***

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Not applicable to the current project.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

This project will not affect the potential use of solar energy by adjacent properties.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

Not applicable to the current project.

*7. **Environmental health***

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

The remedial action has been selected to limit potential exposure to chemicals. Sediments to be dredged contain elevated levels of dioxins. To protect workers, work will be conducted in compliance with a health and safety plan (HASP) consistent with Washington Industrial Safety and Health Act. The project also involves typical risks, such as vehicle leaks, from operation of construction equipment. To control these risks, the contractor will abide by a spill prevention, control and countermeasure plan (SPCC).

1) Describe special emergency services that might be required.

No special emergency services are anticipated.

2) Proposed measures to reduce or control environmental health hazards, if any:

Implementation of the HASP and SPCC will minimize potential environmental health hazards. Contractors will have appropriate health and safety training and personal protective equipment.

b. ***Noise***

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

There are no existing noises in the area that are anticipated to affect the current project.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

The proposed action will generate short-term noise from construction equipment, truck and boat traffic. The normal hours of operation on the site are expected to be from 7:00am to 10:00pm; these hours are consistent with the City of Ridgefield Municipal code.

3) Proposed measures to reduce or control noise impacts, if any:

Remedial action activities will be carried out in a manner consistent with the City of Ridgefield Municipal Code.

8. ***Land and shoreline use***

a. What is the current use of the site and adjacent properties?

The LRIS property is currently vacant except for the Port's administrative, maintenance, and operations offices. A public boat launch ramp, parking area, and restrooms are located at the south end of the property. Existing uses adjacent to the LRIS property include the Ridgefield National Wildlife Refuge to the north, railroad tracks and single-family residences to the east, and a houseboat marina to the south. The City's waste water treatment plant operates to the north and east of the site.

Lake River is used by recreationists (i.e., personal watercraft, water skiing, kayaking, swimming, and other beach activities) and fishers (by boat or from nearby piers). Lake River provides habitat for water-dependent ecological receptors, including aquatic plants, benthic invertebrates, fish, piscivorous mammals, and piscivorous raptors.

b. Has the site been used for agriculture? If so, describe.

The site has not been used for agriculture.

c. Describe any structures on the site.

Infrastructure remnants of historical LRIS river operations located in the Lake River project area include some degraded dolphins, degraded pilings, and a possible submerged bulkhead and other debris. Until recently, a public access dock at the end of Division St. was used by recreationists (e.g., kayaking access) when open. A small dock with a pumphouse structure exists at the north end of the site.

d. Will any structures be demolished? If so, what?

All existing in-water structures except for the small pumphouse dock will be demolished as part of the proposal project.

e. What is the current zoning classification of the site?

The site is currently zoned Waterfront Mixed Use.

f. What is the current comprehensive plan designation of the site?

The current comprehensive plan designation is Mixed Use.

g. If applicable, what is the current shoreline master program designation of the site?

The current shoreline master program designation is High Intensity.

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

The site is located entirely within the Lake River Floodway Fringe, as identified on the Ridgefield Sensitive Lands Map. The site is also located within a Riparian Priority Habitat and Species Area.

i. Approximately how many people would reside or work in the completed project?

None

j. Approximately how many people would the completed project displace?

None

k. Proposed measures to avoid or reduce displacement impacts, if any:

None

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The proposed in-water remedy will not preclude development of the upland portions of the LRIS.

9. ***Housing***

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

None

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None

c. Proposed measures to reduce or control housing impacts, if any:

None

10. ***Aesthetics***

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

Not applicable.

b. What views in the immediate vicinity would be altered or obstructed?

Not applicable.

c. Proposed measures to reduce or control aesthetic impacts, if any:

None

11. ***Light and glare***

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

None

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No

c. What existing off-site sources of light or glare may affect your proposal?

None

d. Proposed measures to reduce or control light and glare impacts, if any:

Not applicable

12. ***Recreation***

a. What designated and informal recreational opportunities are in the immediate vicinity?

Boating, fishing, nature watching

b. Would the proposed project displace any existing recreational uses? If so, describe.

The immediate work area in the river will be temporarily inaccessible. Boats will be able to pass on the west side of the channel.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

The proposed action will facilitate and improve recreation activities in the area by removing contaminants from the environment.

13. ***Historic and cultural preservation***

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

One precontact archaeological site has been identified in the immediate vicinity of the project. Site 45CL4 is on the east bank of the river, partially within the LRIS.

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

As noted above, site 45CL4 is within the vicinity of the site.

In December 2012, precontact artifacts were encountered in a sediment core in Lake River. The artifacts consisted of four pieces of fire-cracked rock and one lithic tool fragment.

c. Proposed measures to reduce or control impacts, if any:

Based on review of Archeological Data on the Stratigraphic Context of Archaeological Deposits in Lake River prepared June 25, 2013 the LRIS remedial action will occur within the framework of a Monitoring and Inadvertent Discovery Plan (IDP). A draft plan was submitted to the COE March 17, 2014 and may be further developed through the involvement of the appropriate Tribes and agencies.

14. ***Transportation***

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

The LRIS site is served by Division Street, which is a City of Ridgefield right-of-way. The area impacted by the current proposal is not adjacent to a public street.

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

The site is not served by public transit. The C-Tran Ridgefield Express bus runs between the Ridgefield Park & Ride located at NW 269th Street and NW 11th Avenue and the Salmon Creek Park and Ride at NE 134th Avenue and the I-5 freeway.

c. How many parking spaces would the completed project have? How many would the project eliminate?

The proposed project would not require any new parking spaces or eliminate existing parking spaces.

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).

The proposed project would not require any new roads. There will be temporary construction access to the sediment handling area.

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

The project may barge dredge spoils up the Columbia River for disposal. Sand and gravel may be barged to the site. Otherwise, rail, or air transportation will not be used.

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

The completed project will not generate any vehicular trips.

g. Proposed measures to reduce or control transportation impacts, if any:

The project will not create any permanent transportation impacts.

15. ***Public services***

a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.

The proposed project will not create an increased need for public services.

b. Proposed measures to reduce or control direct impacts on public services, if any.

Since there are no anticipated impacts, there are no proposed reduction or control measures.

16. ***Utilities***

a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.

Most utilities are available at the LRIS, however the area subject to the current project proposal does not have any utilities available.

b. *Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.*

No utilities are needed or proposed for the project.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature:

Date Submitted:
4-8-14

Source: Aerial photograph (2013) obtained from the National Agriculture Imagery Program (NAIP); taxlot and road data obtained from Clark County (August 2013).

Note: ENR = enhanced natural recovery

Legend

- Dredge Prism
- Fish Mix
- Clean Soil
- Gravel
- ENR Sand

Figure
Lake River Remedy Areas

Lake River Remedial Action
Port of Ridgefield
Ridgefield, Washington

0 100 200
Feet

MAUL FOSTER ALONGI
p. 971 544 2139 | www.maulfoster.com

Path: X:\9003.01 Port of Ridgefield\40\Projects\06\Lake River Remedial Design\Fig_Lake River Remedy Areas.mxd
Print Date: 4/7/2014
Approved By: pweischer
Produced By: jschane
Project: 9003.01.40/06

ATTACHMENT

Department of Ecology
SEPA DETERMINATION FOR LAKE RIVER REMEDIAL ACTION
PACIFIC WOOD TREATING SITE

SUBSTANTIVE REQUIREMENTS OF LOCAL AND STATE PERMITS
City of Ridgefield permits
Washington Department of Fish and Wildlife Hydraulic Project Approval

Lake River – City of Ridgefield Substantive Compliance Review

City of Ridgefield
Shoreline Master Program (SMP)

CHAPTER 2
APPLICABILITY, SHORELINE PERMITS AND EXEMPTIONS

2.1 Applicability

1. **This Program shall apply to all of the shorelands and waters within the City limits that fall under the jurisdiction of RCW 90.58 as follows:**

   a. **Such shorelands shall include those lands extending two hundred (200) feet in all directions as measured on a horizontal plane from the ordinary high water mark (OHWM); floodways and contiguous floodplain areas landward two hundred (200) feet from such floodways; and all wetlands and river deltas associated with the streams, lakes and tidal waters that are subject to the provisions of this Program, as may be amended; the same to be designated as to location by Ecology, as defined by RCW 90.58.**

   b. **In addition to lands identified in Section 2.1(1)(a), shorelands shall include land necessary for buffers for critical areas that occur within shorelines of the state.**

   c. **Such waters include:**

      i. **Lake River within the city limits of Ridgefield to the center of the river north of the southern boundary of Parcel #67441000 and extending the full width of the river south of that line;**

Response: The Applicant understands that the current project includes shorelands and waters that are identified within the City's Shoreline Management Plan, specifically in and along Lake River. The City's shoreline jurisdiction covers the entire project area, therefore the proposal is subject to review of the relevant policies standards and standards of this plan.

2. **Maps indicating the extent of shoreline jurisdiction and shoreline designations are guidance only. They are to be used in conjunction with best available science, field investigations and on-site surveys to accurately establish the location and extent of shoreline jurisdiction when a project is proposed. All areas meeting the definition of a shoreline of the state or a shoreline of statewide significance, whether mapped or not are subject to the provisions of this Program.**

3. **This Program shall apply to every person, individual, firm, partnership, association, organization, corporation, local or state governmental agency, public or municipal corporation, or other non-federal entity that develops, owns, leases, or administers lands, wetlands, or waters that fall under the jurisdiction of the Act; and within the external boundaries of federally owned lands (including but not limited to, private in-holdings in national wildlife refuges).**

4. **Non-federal agency actions undertaken on federal lands must comply with this Program and the Act.**

5. **Shoreline development occurring in or over navigable waters may require a shoreline permit in addition to other approvals required from state and federal agencies.**

6. **This Program shall apply whether the proposed development or activity is exempt from a shoreline permit or not.**

Response: The Applicant understands that the current project must comply with the City's Shoreline Management Program. Pursuant to RCW 70.105D.090, the proposed action is subject to state and federal permit requirements and therefore must comply with the substantive requirements of the underlying local agency permit requirements, but is exempt from the procedural requirements of those permits.

2.2 Shoreline Substantial Development Permit Required

1. **Substantial development as defined by this program and RCW 90.58.030 shall not be undertaken by any person on the shorelines of the state without first obtaining a Shoreline Substantial Development Permit from the Shoreline Administrator, unless the use or development is specifically identified as exempt from a Shoreline Substantial Development Permit, in which case a Statement of Exemption is required.**

2. **The Shoreline Administrator may grant a Shoreline Substantial Development Permit only when the development proposed is consistent with the policies and procedures of RCW 90.58, the provisions of WAC 173-27, and this Program.**

Response: As indicated below, substantial compliance is met, pursuant to RCW 70.105D.090. The project is otherwise exempt from full approval of a permit.

CHAPTER 3
SHORELINE MASTER PROGRAM GOALS AND POLICIES

3.7 Public Access and Recreation

3.7.2 Policies

1. **Provide, protect, and enhance a public access system that is both physical and visual; utilizes both private and public lands; increases the amount and**

diversity of public access to the State's shorelines and adjacent areas; and is consistent with the shoreline character and functions, private rights, and public safety.

2. **Increase and diversify recreational opportunities by promoting the continued public acquisition of appropriate shoreline areas for public use, and develop recreation facilities so that they are distributed throughout the community to foster convenient access.**

3. **Locate public access and recreational facilities in a manner that encourages variety, accessibility, and connectivity in a manner that will preserve the natural characteristics and functions of the shoreline.**

4. **Encourage public access provisions consistent with adopted City and County trails plans.**

5. **Encourage public access as part of each development project by a public entity, and for all private development (except residential development of less than four parcels), unless such access is shown to be incompatible due to reasons of safety, security, or impact to the shoreline environment.**

6. **Discourage shoreline uses that curtail or reduce public access unless such restriction is in the interest of the environment, public health, and safety, or is necessary to a proposed beneficial use.**

7. **Consider private rights, public safety, and protection of shoreline ecological functions and processes when providing public access and recreational opportunities.**

Response: The Applicant proposes a remedial action required by the Washington State Department of Ecology (Ecology) in a Consent Decree (13-2-03830-1) for protection of human health and the environment, as required by Ecology for protection of human health and the environment. The proposed action does not include development. Public access to the shoreline area has recently been increased by the Applicant's completion of a public-access, multi-purpose trail area within the shorelines area. The Applicant has also recently completed a gravel trail that more closely follows the top of the bank. Both of these trails are open to the public except during construction. The Applicant has designed the landscaping plan for the proposed work to retain existing view corridors to Lake River and the neighboring Ridgefield National Wildlife Refuge (RNWR). The proposed vegetation and fish mix rounded rock bank stabilization has been designed to allow public access to the water and within the shoreline area. The proposed action meets the policies.

3.8 Restoration

3.8.2 Policies

1. **Shorelines that are biologically degraded should be reclaimed and restored to the greatest extent feasible. Implementation of restoration projects identified in the Shoreline Restoration Plan that are focused on restoring degraded habitat in shoreline jurisdiction take precedence over other restoration**

projects. Implementation of restoration projects on shorelines of statewide significance take precedence over implementation of restoration projects on other shorelines of the state.

Response: The Applicant proposes to rehabilitate degraded habitat through removal of contaminated sediment, placement of clean sand, bank stabilization, and re-vegetation with native plants; the remediation is required by the state. The proposed action meets the standard.

2. **Restoration strategies should be developed and implemented such that ecosystem processes are sustainable in the long-term.**

Response: The Applicant proposes to permanently remove contaminated sediment and to stabilize the shoreline, providing long-term ecosystem functioning improvement. The riparian area will be re-vegetated with native plants; plantings will be monitored and maintained for five years. The proposed action meets the standard.

3. **Restoration of shoreline ecological functions should be encouraged during redevelopment.**

Response: The Applicant proposes a remedial action for protection of human health and the environment, as required by Ecology. The proposed work does not include redevelopment. The standard is not applicable to the project standard.

4. **Restoration efforts should include retrofitting existing stormwater control facilities to improve water quality.**

Response: The Applicant proposes a remedial action for protection of human health and the environment, as required by Ecology. No new impervious surfaces are proposed. The standard does not apply.

5. **Restoration efforts should consider a focus on floodplain and channel migration zone reconnection where rivers are confined by levees.**

Response: The Applicant proposes to conduct a state-required remedial action in a river. The standard does not apply.

6. **Restoration projects should have adaptive management techniques including adjusting the project design, correcting problems (barriers to success), and implementing contingency measures.**

Response: Although the project is a remedial action required by Ecology, not a restoration project, the Applicant has included contingency measures, best-management practices, and adaptive management techniques in engineering and planting plans. The proposed action meets the standard.

7. **Eradication of invasive species, including noxious weeds and non-native species, should be undertaken as needed.**

Response: The Applicant proposes to remove noxious weeds and non-native species prior to planting native vegetation. A monitoring and maintenance plan has been developed to ensure continued non-native species suppression. The proposed action meets the standard.

8. **Planting of vegetation that enhances shoreline ecological function should be encouraged.**

Response: The Applicant proposes to plant native vegetation suited to shoreline/riparian habitat to maximize ecological function enhancement (e.g., reduce shoreline erosion), including approximately 50 trees. Note deep-rooting trees are not allowed, as indicated in the Consent Decree such that the 2 to 3 foot clean soil environmental cap installed to contain contaminated soil above +11 NGVD is not penetrated by roots. The proposed action meets the standard.

9. **Education programs should be developed for:**

   a. **Property owners about proper vegetation/landscape maintenance and the impacts of shore armoring and over-water structures; and**

   b. **Boaters about proper waste disposal methods, anchoring techniques, best boating practices, and the State's invasive species inspection program pursuant to RCW 77.15.290.**

Response: The Applicant has coordinated the remedial design and associated maintenance and monitoring measures with the overseeing agency (Ecology). Vegetation will be maintained by the Applicant. Buoys will indicate no-wake zones during remedial construction and informational materials about the remedial action will be distributed to nearby residents and made available at public access points such as McCuddy's Marina upstream of the project area. The proposed action meets the standard.

10. **Cooperative restoration actions involving local, state, and federal agencies, Native American tribes, non-government organizations, and landowners should be encouraged.**

Response: The Applicant has coordinated the remedial action design with multiple local, state, and federal agencies via the US Army Corps of Engineers (COE) and Washington Department of Natural Resources Joint Aquatic Resources Permit Application (JARPA) process. Native American tribes have been consulted throughout project development and are being consulted through the Section 106 process. Informational materials will be provided to nearby landowners. The proposed action meets the standard.

3.9 Shoreline Modification and Stabilization

3.9.2 Policies

1. **New developments should be located in such a manner as to not require shoreline stabilization measures.**

Response: The Applicant proposes a remedial action for protection of human health and the environment, as required by Ecology. No new development is proposed. The standard does not apply.

2. **When necessary, natural, non-structural shoreline stabilization measures are preferred over structural stabilization measures. Alternatives for shoreline stabilization should be based on the following hierarchy of preference:**

   a. **No action;**

   b. **Flexible stabilization works constructed of natural materials, including soft shore protection, bioengineering, beach nourishment, protective berms, or vegetative stabilization;**

   c. **Rigid works constructed of structural materials such as riprap or concrete.**

Response: The proposed shoreline stabilization measures are part of a remedial action pursuant to a consent decree for protection of human health and the environment; the proposed shoreline stabilization measures will contain potentially contaminated soil in the river bank and maintain the integrity of the existing clean soil cap above OHWM. Action is required by Ecology. The applicant proposes shoreline stabilization measures consisting of flexible stabilization works constructed of natural materials including vegetated turf reinforcement mat and rounded rock fish mix. The proposed action meets the standard.

3. **Allow new or expanded structural shore stabilization, including bulkheads, only where it is demonstrated to be necessary to protect an existing primary structure that is in danger of loss or substantial damage, and where such structures and structural stabilization would not cause a net loss of shoreline ecological functions and processes.**

Response: No new or expanded structural shore stabilization is proposed. The standard does not apply.

4. **Shoreline stabilization should be located and designed to accommodate the physical character and hydraulic energy potential of a specific shoreline reach, which may differ substantially from adjacent reaches.**

Response: The proposed shoreline stabilization has been designed in accordance with the Corps of Engineers Coastal Engineering Manual to accommodate the physical character and hydraulic energy potential of the shoreline reach. The proposed action meets the standard.

5. **Provisions for multiple use, restoration, and/or public shore access should be incorporated into the location, design and maintenance of shore stabilization for public or quasi-public developments whenever safely compatible with the primary purpose. Shoreline stabilization on publicly owned shorelines should not be allowed to decrease long-term public use of the shoreline.**

Response: The Applicant proposes a remedial action for protection of human health and the environment, as required by Ecology. The proposed action does not include development. Public access to the shoreline area has recently been increased by the Applicant's completion of a public-access, multi-purpose trail area within the shorelines area. The Applicant has also recently completed a gravel trail that more closely follows the top of the bank. Both of these trails will be reopened to the public when construction is complete. The proposed vegetation and fish mix

rounded rock has been designed to allow public access to the water and within the shoreline area. The proposed action meets the standard.

6. **Shoreline stabilization projects should be developed in a coordinated manner among affected property owners and public agencies within a reach where feasible, particularly those that cross jurisdictional boundaries, to address ecological and geo-hydraulic processes and sediment conveyance.**

Response: The Applicant is the only property owner along the reach. The Applicant has coordinated the remedial action design with multiple local, state, and federal agencies via the JARPA permitting process. The proposed action meets the standard.

7. **Failing, harmful, unnecessary, or ineffective shoreline stabilization structures should be removed or replaced to restore shoreline ecological functions and processes.**

Response: The remnants of all existing structures will be removed in the project area. The proposed shoreline stabilization measures are flexible stabilization works constructed of natural materials – including rounded fish mix rock and vegetative stabilization. The proposed action is designed to enhance shoreline ecological functions and processes. The proposed action meets the standard.

8. **Larger works such as jetties, breakwaters, weirs, or groin systems should be permitted only for water-dependent uses and where mitigated to provide no net loss of shoreline ecological functions and processes.**

Response: No larger works are proposed. The standard does not apply.

9. **Lower impact structures, including floating, portable or submerged breakwater structures, or several smaller discontinuous structures, are preferred over higher impact structures.**

Response: No structures are proposed. The standard does not apply.

10. **Encourage and facilitate levee setback (including but not limited to, pulling back an existing levee to allow for a larger floodplain area contiguous to a water body), levee removal, and other shoreline enhancement projects.**

Response: There are no existing levees in the project area. The proposed action meets the standard.

11. **Materials used for construction of shoreline stabilization should be selected for durability, ease of maintenance, and compatibility with local shoreline features.**

Response: The proposed shoreline stabilization measures were selected for durability, ease of maintenance, and compatibility with local shoreline features. The proposed shoreline stabilization measures include turf reinforcement mat with native vegetation and durable, fish mix rounded rock. The proposed action meets the standard.

12. **Development and shoreline modifications that would result in interference with the process of channel migration that may cause significant adverse impacts to property or public improvements and/or result in a net loss of shoreline ecological functions within the rivers and streams should be limited.**

Response: The proposed shoreline stabilization measures are part of a remedial action pursuant to a Consent Decree for protection of human health and the environment; the proposed shoreline stabilization measures are designed to contain potentially contaminated soil in the river bank and to maintain the integrity of the existing clean soil cap above OHWM. The proposed shoreline stabilization measures have been designed to restore shoreline ecological functions and processes.

3.13 Water Quality and Quantity

3.13.2 Policies

1. **Encourage the location, construction, operation, and maintenance of shoreline uses, developments, and activities to be focused on maintaining or improving the quality and quantity of surface and ground water over the long term.**

Response: The proposed action will not result in the location, construction, operation, or maintenance of new shoreline uses. Rather, the proposal is intended to remove contaminated materials and restore the shoreline to an improved state which will have positive impacts on the long term quality of surface water.

2. **Minimize, through effective education, site planning, and best management practices, the inadvertent release of chemicals, activities that cause erosion, stormwater runoff, and faulty on-site sewage systems that could contaminate or cause adverse effects on water quality.**

Response: The Applicant will implement best management practices to eliminate or reduce water quality impacts to the maximum extent practicable. Construction will be conducted with a closed dredge bucket to minimize water quality impacts. The proposed remedial action includes additional components designed to minimize erosion, runoff, and chemical release (i.e., placement of a clean sand layer in the sediment excavation area to minimize chemical residuals, slope stabilization and native plantings and turf reinforcement mat to minimize erosion and runoff). The project will comply with the substantive requirements of the Clean Water Act as implemented by Ecology. The proposed action meets the standard.

3. **Encourage the maintenance and restoration of appropriate vegetative buffers along surface waters to improve water temperature and reduce the adverse effects of erosion and runoff.**

Response: The Applicant proposes to plant native vegetation along the shoreline to reduce erosion and runoff. A plant monitoring and maintenance plan has been developed to maintain native vegetation and associated functions. The proposed action meets the standard.

CHAPTER 4
SHORELINE DESIGNATIONS

4.3.5 High Intensity Shoreline Designation

4.3.5.1 Purpose

The purpose of the "High Intensity" shoreline designation is to provide for high intensity water-oriented commercial, transportation, and industrial uses while protecting existing shoreline ecological functions and restoring ecological functions in areas that have been previously degraded.

4.3.5.2 Designation Criteria

The following criteria are used to consider a High Intensity shoreline designation:

1. **The shoreline is located within incorporated municipalities and designated urban growth areas;**
2. **The shoreline has low to moderate ecological function with low to moderate opportunity for ecological restoration or preservation;**
3. **The shoreline contains mostly industrial, commercial, port facility, mixed-use, or multi-family residential development at high urban densities and may contain industries that are not designated agriculture, forestry, or mineral resource lands in the comprehensive plan;**
4. **The shoreline may be or have been identified as part of a state or federal environmental remediation program;**
5. **The shoreline is planned or platted for high intensity uses in the comprehensive plan; or**
6. **The shoreline may support public passive or active water-oriented recreation where ecological functions can be restored.**

Response: The Applicant understands that the project is entirely within an area of the shorelands designated as High Intensity. The proposed remedial action is consistent with the criteria used to consider the designation.

4.3.5.3 Areas Designated

The High Intensity shoreline designation applies to areas as shown on a copy of the Official Shoreline Designation Map, City of Ridgefield, Washington (Section 4.4) and on a copy of the unofficial map in Appendix A.

Response: The Applicant recognizes that the project is located within an area designated as High Intensity on the official Shoreline Designation Map.

4.3.5.4 Management Policies

In addition to the other applicable policies and standards of this Program the following management policies shall apply:

1. **Encourage regulations that ensure no net loss of shoreline ecological functions as a result of new development.**
2. **Promote infill and redevelopment in developed shoreline areas and encourage environmental remediation and restoration of the shoreline, where applicable with the goal of achieving full utilization of designated high-intensity shorelines.**
3. **Encourage the transition of uses from non-water-oriented to water-oriented uses.**

4. **Water-oriented uses are encouraged, however new non-water oriented uses may be allowed if they do not adversely impact or displace water-oriented uses and when included in a master plan or part of a mixed-use development.**

Response: The proposed remedial action, intended to protect human health and the environment, will facilitate the application and promotion of the identified management policies. The proposal is consistent with this provision.

4.4 Official Shoreline Map

4.4.1 Map Established

1. **The location and extent of areas under the jurisdiction of this Program, and the boundaries of various shoreline designations affecting the lands and waters of the City shall be as shown on the map entitled, "Official Shoreline Designation Map, City of Ridgefield, Washington." All the notations, references, amendments, and other information shown on the "Official Shoreline Designation Map" are hereby made a part of this Program, as if such information set forth on the map were fully described herein.**

Response: The Applicant recognizes that the subject project is located within the jurisdiction of the Official Shoreline Designation Map and that the policies and standards associated with that map and program apply.

CHAPTER 5
GENERAL SHORELINE USE AND DEVELOPMENT REGULATIONS

All uses and development activities in shoreline jurisdiction shall be subject to the following general standards and those in Chapter 5A in addition to the applicable use-specific standards in Chapter 6.

5.1 General Shoreline Use and Development Regulations

1. **Shoreline uses and developments that are water-dependent shall be given priority.**

Response: The Applicant proposes a remedial action to protect human health and the environment in Lake River. The proposed action supports the shoreline uses of the river, including improvements to ecological habitat and public access to the shore.

2. **The applicant shall demonstrate all reasonable efforts have been taken to avoid and where unavoidable, minimize and mitigate impacts such that no net loss of critical area and shoreline ecological function is achieved. Mitigation shall occur in the following order of priority:**

   a. **Avoiding the impact altogether by not taking a certain action or parts of an action. This may necessitate a redesign of the proposal.**

   b. **Minimizing unavoidable impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology**

or by taking affirmative steps to avoid or reduce impacts. The applicant shall seek to minimize fragmentation of the resource to the greatest extent possible.

c. **Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;**

d. **Reducing or eliminating the impact over time by preservation and maintenance operations;**

e. **Compensating for the impact by replacing, enhancing, or providing substitute resources or environments. The compensatory mitigation shall be designed to achieve the functions as soon as practicable.**

f. **Monitoring the impact and the compensation projects and taking appropriate corrective measures.**

Response: The Applicant has incorporated mitigation sequencing (avoiding, minimizing, and mitigating impacts) throughout the project design, which has been overseen by Ecology and coordinated with the COE. Existing native vegetation will be replaced according to a 2:1 lineal foot ratio determined by COE. The proposed action meets the standards.

Avoidance approaches include:

- Through extensive sediment data collection and analysis, the extent of sediment remediation has been clearly defined, so the work effort will focus on impacted areas and avoid impacts to surrounding habitat.
- The remedial action will remove contaminated sediments that currently pose a risk to the environment, so the cleanup avoids continued exposure of fish and wildlife to toxics.
- The currently erosive bank will be stabilized to eliminate soil and associated contamination from entering the aquatic environment.

Minimization measures include the following:

- Best management practices will be implemented to minimize potential short-term impacts from turbidity and noise associated with construction.
- To minimize resuspension and mobilization of contaminants, a precision dredging technique using a barge-mounted, fixed-arm excavator equipped with real-time kinematic global positioning system and a fully enclosed, double-arcing rehandling dredge bucket will be used to remove contaminated sediments.

The following measures will mitigate for construction impacts:

- Habitat in the riparian and aquatic zones will be improved relative to existing conditions through contaminant removal, debris removal in and along the river, and replacement of native vegetation according to a 2:1 lineal foot ratio.

- Maintenance and monitoring: a monitoring approach and adaptive management and maintenance techniques were developed to ensure plantings are effective.

3. **In addition to compensatory mitigation, unavoidable adverse impacts may be further addressed through voluntary restoration efforts.**

Response: The standard is not applicable to the project.

4. **Shoreline uses and developments shall not cause impacts that require remedial action or loss of shoreline ecological functions on other properties.**

Response: The Applicant proposes a remedial action designed specifically to increase ecological functions. The proposed action meets the standard.

5. **Shoreline uses and developments shall be located and designed in a manner such that shoreline stabilization is not necessary at the time of development and will not be necessary in the future for the subject property or other nearby shoreline properties unless it can be demonstrated that stabilization is the only alternative that allows a reasonable and appropriate water-dependent use to become established or expand or protects public safety and existing primary structures.**

Response: The proposed shoreline stabilization measures are part of a remedial action pursuant to a consent decree to protect human health and the environment; the proposed shoreline stabilization measures are designed to contain potentially contaminated soil in the river bank and to maintain the integrity of the existing environmental cap above OHWM. The proposed shoreline stabilization measures have been designed to restore shoreline ecological functions and processes. The proposed action meets the standard.

6. **Land shall not be cleared, graded, filled, excavated or otherwise altered prior to issuance of the necessary permits and approvals including a Shoreline Statement of Exemption for a proposed shoreline use or development to determine if environmental impacts have been avoided, minimized and mitigated to result in no net loss of ecological functions.**

Response: The Applicant is pursuing approval through the JARPA which includes applications for federal, state and local permits. Pursuant to RCW 70.105D.090, remedial actions conducted under a consent decree are exempt from the procedural requirements of applicable state and all local permits. However, Ecology shall ensure compliance with the substantive provisions of these permits. The Applicant has provided these narrative responses to demonstrate compliance with the substantive provisions identified by the City.

7. **Non-water-oriented uses shall not adversely impact or displace water-oriented shoreline uses.**

Response: No non-water-oriented uses are currently proposed. The standard is not applicable.

8. **Single family residential uses shall be allowed on all shorelands not subject to a preference for commercial or industrial water-dependent uses, and shall be**

located, designed and used in accordance with applicable policies and standards of this Program. However, single family residences are prohibited in the Natural shoreline designation, and new floating homes are prohibited in the Aquatic shoreline designation.

Response: Single family residential uses are not proposed. The standard is not applicable.

9. **On navigable waters or their beds, all uses and developments should be located and designed to:**

   a. **Minimize interference with surface navigation;**

   b. **Consider impacts to public views; and**

   c. **Allow for the safe, unobstructed passage of fish and wildlife, particularly species dependent on migration.**

Response: The proposed remedial action will not interfere with surface navigation, will improve public views through the intentional location of required tree plantings, and will improve habitat for fish and wildlife through the removal of toxic materials and placement of native plant species. The standard has been satisfied.

10. **Hazardous materials shall be disposed of and other steps be taken to protect the ecological integrity of the shoreline area in accordance with the other policies and regulations of this Program as amended and all other applicable federal, state, and local statutes, codes, and ordinances. Environmental remediation actions pursuant to a consent decree, order, or agreed order issued under RCW 70.105(D) are exempt from the requirement to obtain an SSDP, SCUP, or SVAR under this Program but must comply with the substantive requirements of the Act and this Program. Any development or redevelopment on a remediated site must occur consistent with any covenants running with the land, the Act and this Program. (See Sections 1.7(6), 2.3.2(19), and 6.1(3).)**

Response: The proposed action will not include the generation, handling, or disposal of hazardous materials. The remedial design is intended to protect the ecological integrity of the shoreline area. The proposed work is pursuant to a consent decree; the proposed work will comply with the substantive requirements of the Act and this Program. The proposed action meets the standard.

11. **In-water work shall be scheduled to protect biological productivity (including but not limited to fish runs, spawning, and benthic productivity). In-water work shall not occur in areas used for commercial fishing during a fishing season unless specifically addressed and mitigated for in the permit.**

Response: The Applicant proposes to conduct work during an in-water work window designated by the Washington Department of Fish and Wildlife (WDFW) and COE to protect biological productivity. The project area is not a commercial fishing area. The proposed action meets the standard.

12. **The effect of proposed in-stream structures on bank margin habitat, channel migration, and floodplain processes should be evaluated during permit review.**

Response: The Applicant does not propose to construct in-stream structures. The proposed action meets the standard.

13. **Previous approvals of master plans for projects in shoreline jurisdiction should be accepted. New phases of projects for which no master plan has yet been approved, or for which major changes are being proposed, or new projects for which master plans are being submitted shall be subject to the policies and regulations of this Program.**

Response: The Applicant understands the standard.

14. **Within urban growth areas (RCW 36.70A.110), the Department of Ecology may grant relief from use and development regulations of this program when:**

    a. **A shoreline restoration project causes or would cause a landward shift in the OHWM creating a hardship meeting specific criteria in RCW 90.58.580;**

    b. **The proposed relief meets specific criteria in RCW 90.58.580; and**

    c. **The application for relief is submitted to Ecology in writing requesting approval or disapproval as part of a normal review of a Shoreline Substantial Development Permit, Shoreline Conditional Use Permit, or Shoreline Variance. If the proposal is not connected to a shoreline permit review, the City may provide a copy of a complete application to Ecology along with the applicant's request for relief.**

Response: The Applicant does not request relief from use and development regulations of the SMP program.

5.3 Critical Areas Protection

5.3.1 General Provisions

1. **In addition to the provisions of this section, critical areas (fish and wildlife habitat conservation areas, frequently flooded areas, geologic hazard areas, critical aquifer recharge areas, and wetlands) located within shoreline jurisdiction and their buffers are regulated and protected by Chapter 5A, RMC 18.280, Critical Areas Protection and RMC 18.750, Flood Control as modified for consistency with the Act and this Program.**

2. **Unless otherwise stated, no development shall be constructed, located, extended, modified, converted, or altered or land divided without full compliance with this Program whether or not a shoreline permit or written Shoreline Statement of Exemption is required.**

3. **Any allowed use, development, or activity affecting a critical area proposed on a parcel located in the shoreline jurisdiction, whether or not exempt from obtaining a Shoreline Substantial Development Permit, Shoreline Conditional Use Permit, or Shoreline Variance, shall be regulated under the provisions of this Program.**

4. **Shoreline uses and developments and their associated structures and equipment shall be located, designed and operated using best management practices to protect critical areas.**

Response: The Applicant understands these standards.

5.4 Public Access

1. **Provisions for adequate public access shall be incorporated into all shoreline development proposals that involve public funding unless the applicant demonstrates public access is not feasible due to one or more of the provisions of Section 5.4.2 (a-e). Where feasible, such projects shall incorporate ecological restoration.**

Response: The shoreline area is currently open to public access. The Applicant has provided multi-use trails open to the public within the shoreline area; these trails will be reopened following construction. The Applicant does not propose any development or use which will decrease public access to the shoreline area. The proposed action meets the standard.

2. **Consistent with constitutional limitations, provisions for adequate public access shall be incorporated into all land divisions and other shoreline development proposals (except residential development of less than five (5) parcels), unless this requirement is clearly inappropriate to the total proposal. Public access will not be required where the applicant demonstrates one or more of the following:**

   a. **Unavoidable health or safety hazards to the public exist that cannot be prevented by any practical means;**

   b. **Inherent security requirements of the use cannot be satisfied through the application of alternative design features or other solutions;**

   c. **The cost of providing the access, easement, alternative amenity, or mitigating the impacts of public access are unreasonably disproportionate to the total proposed development;**

   d. **Significant environmental impacts that cannot be mitigated will result from the public access; or**

   e. **Significant undue and unavoidable conflict between public access requirements and the proposed use and/or adjacent uses would occur, provided that the applicant has first demonstrated and the City determines that all reasonable alternatives have been evaluated and found infeasible, including but not limited to:**

i. **Regulating access by such means as maintaining a gate and/or limiting hours of use;**

ii. **Designing separation of uses and activities (including but not limited to, fences, terracing, use of one-way glazings, hedges, landscaping); and**

iii. **Provisions for access at a site geographically separated from the proposal such as a street end, vista or trail system.**

Response: The shoreline area is currently open to public access. The Applicant has provided multi-use trails open to the public within the shoreline area; these trails will be reopened following construction. The Applicant does not propose any development or use which will decrease public access to the shoreline area. No land division is proposed. The proposed action meets the standard.

3. **Public access sites shall be connected to barrier free route of travel and shall include facilities based on criteria within the within the Americans with Disabilities Act Accessibility guidelines.**

Response: No new public access sites are proposed. The existing multi-use trail was designed in accordance with the Americans with Disabilities Act Accessibility guidelines. The proposed action meets the standard.

4. **Public access shall include provisions for protecting adjacent properties from trespass and other possible adverse impacts to neighboring properties.**

Response: Adjacent properties are already protected from trespass and other adverse impacts by fencing. No new public access or change to existing fencing is proposed. The proposed action meets the standard.

5. **Signs indicating the public's right of access to shoreline areas shall be installed and maintained in conspicuous locations.**

Response: The Applicant will place signage in accordance with the standard at the completion of construction.

6. **Required public access shall be fully developed and available for public use at the time of occupancy of the use or activity.**

Response: Existing public access will be reopened when construction is complete. No new public access is proposed. The proposed action meets the standard.

7. **Public access shall consist of a dedication of land or a physical improvement in the form of a walkway, trail, bikeway, corridor, viewpoint, park, deck, observation tower, pier, boat launching ramp, dock or pier area, or other area serving as a means of view and/or physical approach to public waters and may include interpretive centers and displays.**

Response: Existing public access consists of a multi-use trail within the shoreline area. No new public access is proposed. The proposed action meets the standard.

8. **Public access easements and permit conditions shall be recorded on the deed of title and/or on the face of a plat or short plat as a condition running**

contemporaneous with the authorized land use, as a minimum. Said recording with the County Auditor's Office shall occur at the time of permit approval.

Response: The Applicant will comply with the applicable requirements for recording easements and conditions at the time of proposed permits for public access improvements. This will occur at a future date.

9. **Future actions by the applicant, successors in interest, or other parties shall not diminish the usefulness or value of the public access provided.**

Response: The Applicant understands this standard.

10. **Maintenance of the public access facility shall be the responsibility of the owner unless otherwise accepted by a public or non-profit agency through a formal agreement approved by the Shoreline Administrator and recorded with the County Auditor's Office.**

Response: The Applicant will continue to maintain the multi-use trail.

5.5 Restoration

1. **Restoration of shoreline ecological functions and processes shall be encouraged and allowed on all shorelines and shall be located, designed and implemented in accordance with applicable policies and regulations of this Program and consistent with other City programs (see Section 6.4.4). Implementation of restoration projects on shorelines of statewide significance take precedence over implementation of restoration projects on other shorelines of the state.**

Response: The Applicant proposes to rehabilitate degraded habitat through removal of contaminated sediment and clean sand placement, bank stabilization, and re-vegetation; the remediation is required by the Ecology. The proposed action will be implemented consistent with applicable policies and standards of this Program and consistent with other City programs. The proposed action meets the standard.

2. **Impacts to shoreline ecological functions shall be fully mitigated. Such mitigation may include elements from the Shoreline Restoration Plan, where appropriate.**

Response: The Applicant has incorporated mitigation sequencing (avoiding, minimizing, and mitigating impacts) throughout the project design, which has been overseen by Ecology and coordinated with the COE. Existing native vegetation will be replaced according to a 2:1 lineal foot ratio determined by COE to mitigate for construction impacts. A monitoring approach and adaptive management and maintenance techniques were developed to ensure plantings are effective. In addition, habitat in the riparian and aquatic zones will be improved relative to existing conditions through contaminant removal and debris removal in and along the river. The proposed action meets the standards.

3. **Elements of the Shoreline Restoration Plan may also be implemented in any shoreline designation to improve shoreline ecological function.**

Response: The Applicant understands the standard.

4. **Implementation of restoration projects identified in the Shoreline Restoration Plan that are focused on restoring degraded habitat in shoreline jurisdiction take precedence over other restoration projects.**

Response: The Applicant proposes to rehabilitate degraded habitat through removal of contaminated sediment and clean sand placement, bank stabilization, and re-vegetation; the remediation is required by the state. The proposed action meets the standard.

5. **Restoration efforts shall be developed by a qualified professional, shall be based on federal, state, and local guidance and shall consider the following:**

   a. **Riparian soil conditions;**

   b. **In-stream fish habitats; and**

   c. **Healthy aquatic and terrestrial food webs.**

Response: The Applicant has retained qualified professionals to design the remedial action. Consistent with federal, state, and local guidance, a riparian habitat evaluation identifying soil conditions and shoreline and in-stream habitat structure and fish habitats has been completed, including an evaluation of the habitat functions using the Clark County habitat conservation ordinance Riparian Habitat field rating form; fish data have been reviewed to identify species present; and food web modelling for fish and other aquatic-dependent receptors has been completed to guide remedy area selection. The proposed action meets the standard.

5.6.2 Clearing, Grading, Fill and Excavation

1. **Land disturbing activities such as clearing grading, fill and excavation shall be conducted in such a way as to minimize impacts to soils and native vegetation, and shall comply with RMC 18.755, Erosion Control; 13.30, Stormwater Utility; and RMC Chapter 14.03, Construction Administrative Code.**

Response: The proposed work is designed to minimize impacts to non-contaminated soils and native vegetation. The Applicant proposes to remove existing non-native vegetation and replant disturbed areas with native vegetation. The Applicant will comply with RMC 18.755, Erosion Control; 13.30, Stormwater Utility, and RMC Chapter 14.03, Construction Administrative Code as applicable. The proposed action meets the standard.

2. **Clearing, grading, fill, and excavation activities shall be scheduled to minimize adverse impacts, including but not limited to, damage to water quality and aquatic life.**

Response: The Applicant proposes to conduct work during an in-water work window designated by the WDFW and COE to protect biological productivity. The work will be conducted under the requirements of a water quality plan meeting the substantive requirements of the Clean Water Act Section 401 Water Quality Certification. This

water quality plan was developed by the Port of Ridgefield (Port) and approved by Ecology. The proposed action meets the standard.

3. **Clearing and grading shall not result in changes to surface water drainage patterns that adversely impact adjacent properties.**

Response: The proposed work will not result in changes to surface water drainage patterns. The proposed action meets the standard.

4. **Developments shall comply with the RMC 18.755, Erosion Control during construction and shall ensure preservation of native vegetation for bank stability. Disturbed areas shall be stabilized immediately and revegetated with native vegetation.**

Response: the Applicant will comply with RMC 18.755. Native vegetation will be preserved where possible. Disturbed areas will be stabilized immediately and revegetated with native vegetation. The proposed action meets the standard.

5. **Habitat that cannot be replaced or restored within twenty (20) years shall be preserved. Peat bogs and stands of mature trees are examples of such habitat.**

Response: No peat bogs or stands of mature trees are located within the proposed work area. The Applicant proposes to remove one isolated tree along the shoreline. The Applicant proposes to preserve all other trees. The work area will be re-vegetated with native species, including approximately 50 trees. The proposed action meets the standard.

6. **Fills shall be permitted only in conjunction with a permitted use, and shall be of the minimum size necessary to support that use. Speculative fills are prohibited.**

Response: The Applicant proposes a minimum volume of fill to complete the remedial action. No speculative fills are proposed. The proposed action meets the standard.

7. **Any fill activity shall comply with the fill provisions of RMC Chapter 14.03. Fill shall consist only of clean materials.**

Response: The Applicant proposes to excavate and dispose of contaminated sediments and place clean sand, rock, and soil fill. The proposed action meets the standard.

8. **Soil, gravel or other substrate transported to the site for fill shall be screened and documented that it is uncontaminated. Use of any contaminated materials as fill is prohibited unless done in conjunction with or as part of an environmental remediation project authorized under RCW 70.105D.**

Response: The Applicant will screen soil, gravel, or other substrate transported to the site for fill and will document that it is uncontaminated. No use of contaminated materials as fill is proposed. The proposed action meets the standard.

9. **Fills shall be designed and placed to allow surface water penetration into groundwater supplies where such conditions existed prior to filling unless contrary to the purposes of an environmental remediation project authorized under RCW 70.105D.**

Response: The proposed work will not impede surface water penetration into groundwater supplies. The proposed action meets the standard.

10. **Fills must protect shoreline ecological functions, including channel migration processes.**

Response: The proposed shoreline stabilization measures are part of a remedial action pursuant to a consent decree; the proposed shoreline stabilization measures are designed to contain potentially contaminated soil in the river bank and to maintain the integrity of the existing clean soil cap above OHWM. The proposed shoreline stabilization measures have been designed to restore shoreline ecological functions and processes.

11. **Fill waterward of OHWM shall only be allowed as a conditional use, and then only when it is necessary:**

    a. **To support a water-dependent or public access use;**

    b. **For habitat creation or restoration projects;**

    c. **For remediation of contaminated sediments as part of an interagency environmental clean-up plan;**

    d. **For disposal of dredged material considered suitable under, and conducted in accordance with the dredged material management program of the Washington Department of Natural Resources;**

    e. **For expansion or alteration of transportation facilities of statewide significance currently located on the shoreline and then only upon a demonstration that alternatives to fill are not feasible;**

    f. **For a mitigation action;**

    g. **For environmental restoration; or**

    h. **For a beach nourishment or enhancement project.**

Response: The Applicant proposes to place clean fill for the remediation of contaminated sediments and soils under a consent decree with Ecology. The proposed action meets the standard.

12. **Excavation below the OHWM is considered dredging and subject to provisions under that section in Chapter 6.**

Response: The Applicant will comply with the applicable dredging provisions of section 6 as noted in that section.

13. **Upon completion of construction, remaining cleared areas shall be replanted with native species on the City's Native Plant List (RMC 18.830). Replanted areas shall be maintained such that within three (3) years' time the vegetation is fully re-established.**

Response: The Applicant has proposed a planting and monitoring plan for the remedial action. Plants suited to riparian habitat are selected. All plants selected are native species on

the City's Native Plant List (RMC 18.830). Replanted areas will be monitored and maintained for five years. The standard is met.

5.9 Water Quality and Quantity

1. **The location, design, construction, and management of all shoreline uses and activities shall protect the quality and quantity of surface and ground water adjacent to the site.**

Response: The proposed action will not affect the quality and quantity of surface and ground water adjacent to the site. No work is proposed that will impact the quality of groundwater. The proposed action meets the standard.

2. **All shoreline development shall comply with the applicable requirements of the RMC Chapter 18.755, Erosion Control and 13.30, Stormwater Utility.**

Response: The Applicant will comply with the applicable requirements of RMC Chapter 18.755, Erosion Control and 13.30, Stormwater Utility. The proposed action meets the standard.

3. **Best management practices (BMPs) for control of erosion and sedimentation shall be implemented for all shoreline development.**

Response: The Applicant proposes to conduct work during an in-water work window designated by the WDFW and COE to protect biological productivity. The work will be conducted under the requirements of a water quality plan meeting the substantive requirements of the Clean Water Act Section 401 Water Quality Certification. This water quality plan is developed by the Port and approved by Ecology. The proposed action includes the use of BMPs for control of erosion and sedimentation. The proposed action meets the standard.

4. **Potentially harmful materials, including but not limited to oil, chemicals, tires, or hazardous materials, shall not be allowed to enter any body of water or wetland, or to be discharged onto the land except in accordance with RMC 13.30, Stormwater Utility. Potentially harmful materials shall be maintained in safe and leak-proof containers.**

Response: The Applicant understands this standard; the proposed work will be conducted in accordance with applicable federal, state and local standards. The proposed action meets the standard.

5. **Herbicides, fungicides, fertilizers, and pesticides shall not be applied within twenty-five (25) feet of a waterbody, except by a qualified professional in accordance with state and federal laws. Further, pesticides subject to the final ruling in Washington Toxics Coalition, et al., v. EPA shall not be applied within sixty (60) feet for ground applications or within three hundred (300) feet for aerial applications of the subject water bodies and shall be applied by a qualified professional in accordance with state and federal law.**

Response: No pesticide or fungicide use is proposed. Any herbicides or fertilizers will be applied by a qualified professional in accordance with state and federal laws. The proposed action meets the standard.

6. **Any structure or feature in the Aquatic shoreline designation shall be constructed and/or maintained with materials that will not adversely affect water quality or aquatic plants or animals. Materials used for decking or other structural components shall be approved by applicable state agencies for contact with water to avoid discharge of pollutants.**

Response: No structures or features are proposed.

7. **Septic systems should be located as far landward of the shoreline and floodway as possible. Where permitted, new on-site septic systems shall be located, designed, operated, and maintained to meet all applicable water quality, utility, and health standards.**

Response: No septic systems are proposed.

CHAPTER 5A
GENERAL SHORELINE USE AND DEVELOPMENT REGULATIONS CONTINUED: CRITICAL AREAS REGULATIONS

18.280.030 - Applicability and exemptions

A. Applicability.

Response: The Applicant understands that the critical area standards apply to the current application. Findings demonstrating substantive compliance with the applicable requirements are provided herein.

18.280.060 - Approval criteria

Any activity subject to this chapter, unless otherwise provided for in this chapter, shall be reviewed and approved, approved with conditions, or denied based on the proposal's ability to comply with all of the following criteria. The city may condition the proposed activity as necessary to mitigate impacts to critical areas and their buffers and to conform to the standards required by this chapter. Activities shall protect the functions of the critical areas and buffers on the site.

A. **Avoid Impacts. The applicant shall first avoid all impacts that degrade the functions and values of (a) critical area(s) by not taking a certain action or parts of an action. This may necessitate a redesign of the proposal.**

Response: The Applicant has implemented mitigation sequencing (avoiding, minimizing, and mitigating impacts) throughout the project design. The proposed action meets the standard. Avoidance approaches include:

Avoidance approaches include:

- Through extensive sediment data collection and analysis, the extent of sediment remediation has been clearly defined, so the work effort will focus on impacted areas and avoid impacts to surrounding habitat.

- The remedial action will remove contaminated sediments that currently pose a risk to the environment, so the cleanup avoids continued exposure of fish and wildlife to toxics.
- The currently erosive bank will be stabilized to eliminate soil and associated contamination from entering the aquatic environment.

B. **Minimize Impacts. The applicant shall minimize the impact of the activity by limiting the degree or magnitude of the action and its implementation by using appropriate technology or by taking affirmative steps to avoid or reduce impacts. The applicant shall seek to minimize the fragmentation of the resource to the greatest extent possible.**

Response: The Applicant has implemented mitigation sequencing (avoiding, minimizing, and mitigating impacts) throughout the project design. The proposed action meets the standard. Minimization measures include the following:

- Minimization measures include the following:
- Best management practices will be implemented to minimize potential short-term impacts from turbidity and noise associated with construction.
- To minimize resuspension and mobilization of contaminants, a precision dredging technique using a barge-mounted, fixed-arm excavator equipped with real-time kinematic global positioning system and a fully-enclosed, double-arcing rehandling dredge bucket will be used to remove impacted sediments.
- Native vegetation will be preserved where possible.

C. **Rectify Impacts. The applicant shall rectify the impacts by repairing, rehabilitating, or restoring the affected environment.**

Response: The Applicant proposes a remedial action designed specifically to rehabilitate Lake River. The shoreline will be planted with native vegetation following clearing and bank stabilization activities. Plantings will be monitored and maintained for five years. The proposed action meets the standard.

D. **Reduce Impacts. The applicant shall reduce or eliminate the impacts over time by preservation and maintenance operations.**

Response: The Applicant proposes a remedial action that provides long-term environmental benefit. Short-term construction impacts will be reduced through use of best management practices, including spill prevention and pollution-, erosion-, and sediment-control measures and adherence to the water quality plan. The proposed action meets the standard.

E. **Compensatory Mitigation. The applicant shall compensate for the impacts by replacing, enhancing, or providing substitute resources or environments. The compensatory mitigation shall be designed to achieve the functions as soon as practicable.**

Response: Construction impacts to shoreline ecological functions will be mitigated by the following project components:

- Habitat in the riparian and aquatic zones will be improved relative to existing conditions through contaminant removal, debris removal in and along the river, and replacement of native vegetation according to a 2:1 lineal foot ratio.
- Maintenance and monitoring. A monitoring approach and adaptive management and maintenance techniques were developed to ensure plantings are effective. The proposed project meets the standard.

F. Monitor Impacts and Mitigation. The applicant shall monitor the impacts and the compensation projects and take appropriate corrective measures.

Response: The Applicant has developed a planting maintenance and monitoring plan. A monitoring approach and adaptive management and maintenance techniques were developed to ensure plantings successfully establish. Plantings will be maintained and monitored for five years. The proposed action meets the standard.

G. **Type and Location of Mitigation. Compensatory mitigation shall be in-kind and on-site when feasible, and sufficient to maintain the functions of the critical area consistent with the mitigation provisions of this ordinance, and to prevent risk from a hazard posed by a critical area to a development or by a development to a critical area. Wetland mitigation bank credits shall only be utilized when consistent with the provisions of this ordinance.**

Response: On-site mitigation will be conducted. Native vegetation and associated ecological functions will be improved relative to the existing condition. The proposed project meets the standard.

H. **In addition to mitigation, unavoidable adverse impacts may be addressed through restoration efforts.**

Response: The Applicant proposes a remedial action designed specifically to rehabilitate Lake River.

I. **No Net Loss. The proposal protects the critical area functions and values and results in no net loss of critical area functions and values.**

Response: The Applicant proposes a remedial action designed specifically to provide environmental benefit to Lake River. The remedial action required by Ecology addresses unacceptable risks to ecological receptors and includes dredging contaminated sediment, placing clean sand to contain residual contamination, stabilizing the shoreline bank, and re-vegetating the riparian area with native plants. Therefore, the project will results in a net increase in critical area functions and values. The proposed action meets the standard.

J. **Consistency with General Purposes. The proposal is consistent with the general purposes of this chapter and does not pose a significant threat to the public health, safety, or welfare on or off the development proposal site;**

Response: The Applicant proposes a remedial action for protection of human health and the environment that is designed with oversight from Ecology and is consistent with the general purposes of this chapter. Public health, safety, or welfare will not be significantly affected. The proposed action meets the standard.

18.280.110 - Fish and wildlife habitat conservation areas.

A. Designation.

1. **There are established in the city the following identified fish and wildlife habitat conservation areas:**

   a. **Habitat for any life stage of state or federally designated endangered, threatened, and sensitive fish or wildlife species. A current list of federally and state identified species is available from the shoreline administrator.**

   b. **Priority Habitats and areas associated with Priority Species. Current lists of priority habitats and species and applicable management recommendations promulgated by the Washington Department of Fish and Wildlife are available from the shoreline administrator.**

   c. **Water bodies including lakes, streams, rivers and naturally occurring ponds.**

Response: The Applicant understands these designations.

2. **Habitat Location Information. Information on the approximate location and extent of habitat conservation areas is available from the shoreline administrator. The habitat location information is based on:**

   a. **Washington Department of Fish and Wildlife Priority Habitat and Species Maps.**

   b. **Washington Department of Fish and Wildlife Anadromous and Resident Salmonid Distribution Maps in the Salmon and Steelhead Habitat Inventory Assessment Program (SSHIAP).**

   c. **Washington Department of Natural Resources Official Water Type Reference Maps.**

   d. **Other information acquired by the city.**

Response: The project site is located in Lake River and is therefore designated a habitat conservation area.

B. Fish and Wildlife Habitat Conservation Areas and Riparian Buffers. Fish and wildlife habitat conservation areas within the city shall be established pursuant to the Washington State Department of Natural Resources Stream Typing System, as amended. Fish and wildlife habitat conservation areas shall be established by a qualified professional and shall be measured to include the land in each direction from the ordinary high water mark of the designated stream type.

1. **The minimum riparian buffer widths for stream types designated in accordance with the Washington State Department of Natural Resources (DNR) Stream Typing System shall be as described in Table 18.280.110-1.**

Response: The Applicant notes the project area is in Lake River, which is a shoreline of the state. The minimum riparian buffer width is designated as 150 feet. However, an existing asphalt trial along the Port of Ridgefield property is located parallel to the shoreline. The asphalt trail setback from the ordinary high water mark is greater than 150 feet along the northern portion of the property, and approximately 75 feet along the southern portion. Therefore, the required riparian buffer extends from the ordinary high water mark to 150 feet landward or to the existing asphalt trail (i.e., to the impervious surface), whichever is less. No development within the buffer is proposed as a result of project activities.

2. **Fish and wildlife habitat conservation areas and associated buffers shall be identified on the face of plat maps site plans or other development plans, and shall be protected in perpetuity with conservation covenants, deed restrictions or other legally binding mechanisms.**

Response: No new plat maps or additional development plans are proposed. Lake River is identified as a habitat conservation area per 18.280.110 (A.1.c) above.

3. **If impervious surfaces from previous development completely functionally isolate the designated stream type and associated buffer the regulated fish and wildlife habitat conservation shall extend from the ordinary high water mark to the impervious surfaces. An example would be an existing industrial paved area and warehouses in the riparian buffer.**

Response: Functionally isolated areas are generally defined as areas that do not provide vegetation or habitat functions to the adjacent critical areas. The existing asphalt trial along the Port of Ridgefield property is located parallel to the shoreline and does not provide habitat functions. The asphalt trail setback is greater than 150 feet along the northern portion of the property, and approximately 75 feet along the southern portion. Therefore, the required riparian buffer extends from the ordinary high water mark to 150 feet landward or to the existing asphalt trail (i.e., the impervious surface), whichever is less.

D. Performance Standards.

1. General.

a. **Development or clearing activities shall protect the functions of the fish and wildlife habitat conservation areas on the site. The activity shall result in no net loss of functions. Protection can be provided by avoiding (the preferred protection) or minimizing and mitigating. Functions include:**

i. **Providing habitat for breeding, rearing, foraging, protection and escape, migration, and over-wintering.**

ii. **Providing complexity of physical structure, supporting biological diversity, regulating stormwater runoff and**

infiltration, removing pollutants from water, and maintaining appropriate temperatures.

Response: The Applicant proposes a remedial action designed for environmental benefit. Lake River sediments are contaminated at levels that present unacceptable risk to ecological receptors. The proposed action provides for a net gain of ecological function, primarily by removal of contaminants to improve habitat, increase in native plant abundance and structure, and measures (slope stabilization and native plantings) to reduce erosion and runoff. The proposed action meets the standard.

b. **An applicant shall replace any lost functions by enhancement to other functions, so long as the applicant demonstrates that enhancement of the other functions provides no net loss in overall functions and maintains habitat connectivity. An example of unavoidable loss of function would be interruption of a travel corridor in a fish and wildlife habitat conservation area and its associated buffer. To the maximum extent feasible, enhancement shall be undertaken on-site.**

Response: Habitat is currently severely degraded, as sediment conditions are not protective of benthic and aquatic species that rely on benthos (e.g., biota may bioaccumulate contaminants). The proposed action provides for a net gain of ecological function, primarily by removal of contaminants to improve habitat, increase in native plant abundance and structure, and measures (slope stabilization and native plantings) to reduce erosion and runoff. The proposed action meets the standard.

c. **If development or clearing activity is within a priority habitat and species area the applicant shall follow Washington Department of Fish and Wildlife Management Guidelines or other standards approved by the Washington Department of Fish and Wildlife.**

Response: The Applicant notes the project is exempt from a WDFW Hydraulic Project Approval. However, substantive requirements developed for the project by WDFW will be met. The in-water work window designated by WDFW will be observed. The proposed action meets the standard.

d. **Signs for Fish and Wildlife Conservation Areas:**

i. **Temporary markers. The location of the outer perimeter of the fish and wildlife habitat conservation area shall be marked in the field, and such marking shall be approved by the shoreline administrator prior to the commencement of permitted activities. Such field markings shall be maintained throughout the duration of the permit.**

ii. **Permanent signs. Wood or metal signs shall be posted at an interval of one per lot for single family residential uses or at a maximum interval of two hundred feet or as otherwise determined by the shoreline administrator, and must be perpetually maintained by the property owner. The sign shall be worded as follows or with alternative language approved by the shoreline administrator: "The area beyond this sign is a fish**

and wildlife habitat conservation area. Alteration or disturbance is prohibited by law. Please call the City of Ridgefield for more information.

Response: Signs will be installed consistent with the applicable requirements. The proposed action meets the standard.

2. Fish and Wildlife Habitat Conservation Areas and Riparian Buffers.

a. **Fish and Wildlife Habitat Conservation Areas. Development or clearing activity may occur in Fish and Wildlife Habitat Conservation Areas for the following:**

i. **A water-dependent, water-related or water-enjoyment activity where there are no feasible alternatives that would have a less adverse impact on the fish and wildlife habitat conservation area or riparian buffer. The applicant shall minimize the impact and mitigate for any unavoidable impact to functions; or**

ii. **A road, railroad, trail, dike, or levee or a water, sewer, stormwater conveyance, gas, electric, cable, fiber optic cable, or telephone facility that cannot feasibly be located outside of the fish and wildlife habitat conservation area, that minimizes impacts, and that mitigates for any unavoidable impact to functions; or**

iii. **Trails and wildlife viewing structures provided that the trails and structures are constructed to minimize impacts.**

Response: The Applicant proposes a project required by the state for environmental benefit that has been designed to avoid, minimize, and mitigate for impacts. Other alternatives were evaluated but not selected as detailed in the Ecology-issued cleanup action plan. Clearing of native vegetation will be replaced at a 2:1 ratio. The proposed action meets the standard 2(a)(i).

b. **Riparian Buffer. Development or clearing activity may occur in the riparian buffer, provided that mitigation is conducted that results in no net loss of riparian habitat functions on the site, and further, that functionally significant habitat, defined as habitat that cannot be replaced or restored within twenty years, shall be preserved unless the clearing or development activity cannot feasibly be located on the site outside of the riparian buffer. An example of habitat that cannot be replaced within twenty years would be a stand of mature trees or a peat bog.**

Response: The Applicant proposes to stabilize the bank within the riparian buffer. This includes clearing of vegetation (primarily non-native) and installation of turf reinforcement and native plants to reduce run-off and erosion. Planting of native vegetation includes approximately 50 trees. Therefore, bank stabilization elements cannot be feasibly located outside of the riparian buffer and native plantings and improved erosion- and runoff control will result in no net loss of riparian function. The proposed action meets the standard.

c. **Buffer Width Averaging. The shoreline administrator may allow buffer width averaging in accordance with an approved critical area report on a case-by-case basis. Buffer width averaging shall not be used in combination with buffer width reduction on the same buffer segment to reduce the minimum buffer width below that specified in this chapter. Averaging of buffer widths may only be allowed where a qualified ecologist or biologist demonstrates that:**

i. **Such averaging will not reduce functions or functional performance; and**

ii. **The fish and wildlife habitat conservation area varies in sensitivity due to existing physical characteristics or the character of the buffer varies in slope, soils, or vegetation, and the wetland would benefit from a wider buffer in places and would not be adversely impacted by a narrower buffer in other places; and**

iii. **The total area contained in the buffer area after averaging is no less than that which would be contained within the standard buffer; and**

iv. **The buffer width is reduced by no more than fifty percent of the standard width and at no point to less than twenty-five feet.**

Response: No buffer width averaging is proposed.

d. **Buffer Width Reduction. The shoreline administrator may authorize the reduction of required buffer widths to a lesser width provided that an applicant demonstrates compliance with the following:**

i. **Written evidence prepared by a qualified ecologist or biologist addressing the proposed buffer width reduction and demonstrating how the reduced buffer will enhance the functions and values of the fish and wildlife habitat conservation area.**

ii. **The remaining buffer area shall be intensely planted with a mixture of native vegetation pursuant to an approved landscape plan prepared by a registered landscape architect in the State of Washington and reviewed and certified by a qualified ecologist or biologist certifying that the plantings to be used in the remaining buffer area will compliment and support the functions and values of the fish and wildlife habitat conservation area.**

iii. **The remaining buffer area shall be managed by the applicant or applicant's successor in interest for a minimum of three years following the city's final acceptance of any portion or phase of the project. A detailed management plan prepared by a qualified ecologist or biologist shall be submitted for city**

review and approval prior to the City's authorization of any on-site construction, unless otherwise authorized by the shoreline administrator. The detailed management plan shall address among other things the replanting of dead or dying plant material, the contents and submittal to the city of annual monitoring report prepared by a qualified ecologist or biologist with the cost of this report to be borne entirely by the applicant or applicant's successor in interest and methods to address any identified problems with the buffer's support of the functional value of the fish and wildlife habitat conservation area.

Response: The required buffer extends from the ordinary high water mark to the functionally isolated boundary/existing asphalt trail associated with the Port property.

e. **Buffer width reduction shall not be used in combination with buffer width averaging on the same buffer segment, but can be used in combination with the same wetland resource. Where multiple resources exist on a property or site, the shoreline administrator may authorize the use of buffer width averaging and buffer width reduction on different resources on the property or site provided that any required scientific analysis or reporting addresses and supports the separate use.**

Response: No buffer width averaging is proposed.

f. **Buffer Maintenance. Except as otherwise specified or allowed in accordance with this chapter, buffers for fish and wildlife habitat conservation areas shall be maintained according to the approved critical area permit.**

Response: The Applicant understands the standard.

g. **Buffer Uses. The following uses may be permitted within a buffer for a fish and wildlife habitat conservation area in accordance with the review procedures of this chapter; provided, they are not prohibited by any other applicable law or regulation and they are conducted in a manner so as to minimize impacts to the buffer and the wetland:**

i. **Activities allowed under the same terms and conditions as in the associated fish and wildlife habitat conservation areas.**

ii. **Enhancement and restoration activities aimed at protecting the soil, water, vegetation or wildlife.**

iii. **Passive recreation facilities including trails and wildlife viewing structures, provided that the trails and structures are constructed with a surface that does not interfere with wetland hydrology.**

iv. **Stormwater management facilities limited to detention facilities, constructed wetlands, stormwater dispersion outfalls and**

bioswales, may be constructed in accordance with an approved critical area report.

Response: The Applicant proposes a remedial action aimed at protecting ecological receptors and enhancing the plant community. The proposed action meets the standard.

3. Signs and Fencing of Fish and Wildlife Habitat Conservation Areas:

a. **The location of the outer perimeter of the fish and wildlife habitat conservation areas and its buffer shall be marked in the field, and such marking shall be approved by the shoreline administrator prior to the commencement of permitted activities. Such field markings shall be maintained throughout the duration of the permit.**

b. **A permanent physical demarcation along the upland boundary of the fish and wildlife habitat conservation area buffer shall be installed and thereafter maintained. Such demarcation may consist of fencing, hedging or other prominent physical marking that allows wildlife passage, blends with the wetland environment, and is approved by the shoreline administrator.**

c. **Permanent fencing of the fish and wildlife habitat conservation area buffer on the outer perimeter shall be erected and thereafter maintained when there is a substantial likelihood of the presence of domestic grazing animals within the property unless the shoreline administrator determines that the animals would not degrade the functions of the fish and wildlife habitat conservation area or buffer.**

d. **Wood or metal signs shall be posted at an interval of one per lot for single family residential uses or at a maximum interval of two hundred feet or as otherwise determined by the shoreline administrator, and must be perpetually maintained by the property owner. The sign shall be worded as follows or with alternative language approved by the shoreline administrator: "The area beyond this sign is a fish and wildlife habitat conservation area or fish and wildlife habitat conservation area buffer. Alteration or disturbance is prohibited by law. Please call the City of Ridgefield for more information."**

Response: Signs will be installed consistent with the applicable requirements. The proposed action meets the standard.

CHAPTER 5B 18.750
FLOOD CONTROL

18.750.030 General provisions.

A. **Lands to Which this Chapter Applies. This chapter shall apply to all areas of special flood hazards within the jurisdiction of the city of Ridgefield.**

Response: The Applicant understands that the provisions of this chapter apply to the Lake River remedial project pursuant to the applicable Flood Insurance Rate Map.

18.750.060 - Specific standards.

B. Nonresidential Construction. New construction and substantial improvement of any commercial, industrial or other nonresidential structure shall either have the lowest floor, including basement, elevated one foot or more above the base flood elevation; or, together with attendant utility and sanitary facilities, shall:

Response: The standard is not applicable. The Applicant is not proposing new construction or substantial improvement of any commercial, industrial or other nonresidential structure.

F. Floodways and Channel Migration Zones. Located within areas of special flood hazard are areas designated as floodways and channel migration zones. Since the floodway is an extremely hazardous area due to the velocity of floodwaters that can carry debris, and increase erosion potential, and channel migration zones are hazardous due to alteration of the location of the watercourse by natural processes, the following provisions apply:

Response: As shown on FEMA FIRM 53011C0184, the frequently flooded areas of the project site are part of the Columbia River flood fringe – within Zone AE but outside the floodway. The proposed action is not within a floodway.

G. Critical Facility. Construction of new critical facilities shall be, to the extent possible, located outside the limits of the special flood hazard area (SFHA) (one-hundred-year floodplain). Construction of new critical facilities shall be permissible within the SFHA in accordance with Section 18.750.060(F) if no feasible alternative site is available. Critical facilities constructed within the SFHA shall have the lowest floor elevated three feet above BFE or to the height of the five-hundred-year flood, whichever is higher. Access to and from the critical facility should also be protected to the height utilized above. Floodproofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into floodwaters. Access routes elevated to or above the level of the base flood elevation shall be provided to all critical facilities to the extent possible.

Response: The standard is not applicable. No new critical facilities are proposed.

CHAPTER 6
SPECIFIC SHORELINE USE REGULATIONS

6.4.2 Dredging and Dredge Material Disposal

6.4.2.1 General

1. **Dredging and dredge disposal shall be prohibited on or in archaeological sites that are listed on the National Register of Historic Places, the Washington Heritage Register, and/or the Clark County Heritage Register until such time that they have been reviewed and approved by the appropriate agency.**

Response: The site is not listed in the registers identified above. The Applicant has engaged a qualified professional to identify cultural resources at the site and the COE is conducting Section 106 review for cultural resources. Sediment excavation (as currently designed) will occur only if it is determined that no significant archaeological or historical resources would be affected by the proposed action. The proposed action meets the standard.

2. **Dredging and dredge disposal shall be scheduled to protect biological productivity (including but not limited to, fish runs, spawning, and benthic productivity) and to minimize interference with fishing activities. Dredging activities shall not occur in areas used for commercial fishing (including but not limited to, drift netting and crabbing) during a fishing season unless specifically addressed and mitigated for in the permit.**

Response: The Applicant proposes to conduct work during an in-water work window designated by WDFW and COE to protect biological productivity. The project area is not a commercial fishing area. The proposed action meets the standard.

6.4.2.2 Dredging

1. **Dredging shall be avoided where possible. Dredging shall be permitted only where it is demonstrated that the proposed water-dependent or water-related uses will not result in significant or ongoing adverse impacts to water quality, fish and wildlife habitat conservation areas and other critical areas, flood holding capacity, natural drainage and water circulation patterns, significant plant communities, prime agricultural land, and public access to shorelines unless one or more of these impacts cannot be avoided. When such impacts are unavoidable, they shall be minimized and mitigated such that they result in no net loss of shoreline ecological functions.**

Response: No water-dependent or water-related uses are proposed. The proposed action involves the dredging and disposal of contaminated sediments for environmental remediation. The project is designed to improve the shoreline ecological functions. The proposed action meets the standard.

2. **Maintenance dredging of established navigation channels and basins shall be restricted to managing previously dredged and/or existing authorized location, depth and width.**

Response: No maintenance dredging is proposed.

3. **Dredging activity is prohibited in the following locations:**

a. **Along net positive drift sectors and where geohydraulic-hydraulic processes are active and accretion shore forms would be damaged, altered, or irretrievably lost;**

b. **In shoreline areas with bottom materials that are prone to significant sloughing and refilling due to currents or tidal activity which result in the need for continual maintenance dredging;**

c. **In habitats identified as critical to the life cycle of officially designated or protected fish, shellfish, or wildlife.**

Response: No known net positive drift sectors, shorelines with bottom materials that are prone to significant sloughing and refilling, or habitats identified as critical to the life cycle of officially designated or protected fish, shellfish, or wildlife are present. The criteria do not apply.

4. **Dredging techniques that cause minimum dispersal and broadcast of bottom material shall be used, and only the amount of dredging necessary shall be permitted.**

Response: The work will be conducted by a highly prescriptive precision dredging method under the requirements of a water quality plan meeting the substantive requirements of the Clean Water Act Section 401 Water Quality Certification. This water quality plan was developed by the Port and approved by Ecology. Only the minimum amount of dredging necessary to complete the remedial action is proposed. The proposed action meets the standard.

5. **Dredging shall be permitted only:**

a. **For navigation or navigational access;**

b. **In conjunction with a water-dependent use of water bodies or adjacent shorelands;**

c. **As part of an approved habitat improvement project;**

d. **To improve water flow or water quality, provided that all dredged material shall be contained and managed so as to prevent it from reentering the water; or**

e. **In conjunction with a bridge, navigational structure or wastewater treatment facility for which there is a documented public need and where other feasible sites or routes do not exist.**

Response: The proposed dredging is pursuant to a consent decree between Ecology and the Applicant. The dredging is proposed to improve water quality and remedy sediments to be protective of ecological receptors. The proposed action meets the standard.

6. **Dredging for fill is prohibited except where the material is necessary for restoration of shoreline ecological functions. When allowed, the site where the fill is to be placed must be located waterward of the ordinary high-water mark. The project must be either associated with a MTCA or CERCLA habitat restoration project or, if approved through a shoreline Shoreline**

Conditional Use Permit, any other significant habitat enhancement project (WAC 173-26-231(3)(f)).

Response: No dredging for fill is proposed. The criteria do not apply.

6.4.2.3 Dredge Material Disposal

1. **Dredge material disposal shall be avoided where possible. Dredge disposal shall be permitted only where it is demonstrated that the proposed water-dependent or water-related uses will not result in significant or ongoing adverse impacts to water quality, fish and wildlife habitat conservation areas and other critical areas, flood holding capacity, natural drainage and water circulation patterns, significant plant communities, prime agricultural land, and public access to shorelines. When such impacts are unavoidable, they shall be minimized and mitigated such that they result in no net loss of shoreline ecological functions.**

Response: No onsite disposal of dredge material is proposed. Disposal of the dredge material is proposed in a permitted, Subtitle D landfill. The criteria do not apply.

2. **Near shore or landside disposal of dredge materials shall not be located upon, adversely affect, or diminish:**

   a. **Stream mouths, wetlands, or significant plant communities (approved mitigation plans may justify exceptions);**

   b. **Prime agricultural land except as enhancement;**

   c. **Natural resources including but not limited to sand and gravel deposits, timber, or natural recreational beaches and waters except for enhancement purposes;**

   d. **Designated or officially recognized wildlife habitat and concentration areas;**

   e. **Water quality, quantity, and drainage characteristics; and**

   f. **Public access to shorelines and water bodies.**

Response: Disposal of the dredge material will occur in a permitted, Subtitle D landfill. The criteria do not apply.

3. **Dredge material shall be disposed of on land only at sites reviewed and approved by the USACOE and the Shoreline Administrator. Applicants shall demonstrate that the proposed site will ultimately be suitable for a use permitted by this Program. Disposal shall be undertaken such that:**

   a. **The smallest possible land area is affected, unless dispersed disposal is authorized as a condition of permit approval for soil enhancement or other purposes;**

b. **Shoreline ecological functions and processes will be preserved, including protection of surface and ground water;**

c. **Erosion, sedimentation, floodwaters or runoff will not increase adverse impacts to shoreline ecological functions and processes or property; and**

d. **Sites will be adequately screened from view of local residents or passersby on public right-of-ways to the maximum extent practicable.**

Response: As the dredge material is contaminated, it will be disposed of in a permitted, Subtitle D landfill. The criteria do not apply.

4. **The following conditions shall apply to land disposal sites:**

Response: Disposal will occur elsewhere. The criteria do not apply.

5. **Dredge material shall be disposed of in water only at sites approved by the USACOE and the Shoreline Administrator. Disposal techniques that cause minimum dispersal and broadcast of bottom material shall be used, and only if:**

Response: No in water disposal is proposed. The criteria do not apply.

6. **The deposition of dredged materials in water or wetlands shall be permitted only in approved, open water disposal sites and:**

a. **To improve wildlife habitat;**

b. **To correct material distribution problems adversely affecting fish habitat;**

c. **To create, expand, rehabilitate, or enhance a beach when permitted under this Program and any required state or federal permit; or**

d. **When land deposition is demonstrated to be more detrimental to shoreline resources than water deposition.**

Response: No in water or wetland disposal of dredge material is proposed. The criteria do not apply.

6.4.3.3 In-stream Structures

Response: In-stream structures are not proposed. The current proposal relates only to the shoreline of Lake River. The criteria do not apply.

6.4.4 Shoreline Restoration and Enhancement

1. **Shoreline restoration and enhancement activities designed to restore shoreline ecological functions and processes and/or shoreline features should be targeted toward meeting the needs of sensitive and/or regionally important plant, fish, and wildlife species and shall be given priority. Implementation of**

restoration projects on shorelines of statewide significance take precedence over implementation of restoration projects on other shorelines of the state.

Response: The Applicant proposes to rehabilitate degraded habitat through removal of contaminated sediment and clean sand placement, bank stabilization, and re-vegetation; the remediation is required by the state. The proposed project meets the standard.

2. **Shoreline restoration, enhancement, and mitigation activities designed to create dynamic and sustainable ecosystems to assist the city in achieving no net loss of shoreline ecological functions are preferred.**

Response: The Applicant proposes to rehabilitate degraded habitat through removal of contaminated sediment and clean sand placement, bank stabilization, and re-vegetation; the remediation is required by the state. The proposed project meets the standard.

3. **Restoration activities shall be carried out in accordance with an approved shoreline restoration plan, and in accordance with the provisions of this Program.**

Response: Restoration is typically non-regulatory voluntary, and most often undertaken by public agencies, environmental stewardship groups, or local governments often in partnership with private landowners. The Applicant proposes to rehabilitate degraded habitat through removal of contaminated sediment and clean sand placement, bank stabilization, and re-vegetation; the remediation is required by the state. The standard does not apply.

4. **To the extent possible, restoration, enhancement, and mitigation activities shall be integrated and coordinated with other parallel natural resource management efforts. Implementation of restoration projects identified in the Shoreline Restoration Plan that are focused on restoring degraded habitat in shoreline jurisdiction take precedence over other restoration projects.**

Response: Restoration is typically non-regulatory voluntary, and most often undertaken by public agencies, environmental stewardship groups, or local governments often in partnership with private landowners. The Applicant proposes to rehabilitate degraded habitat through removal of contaminated sediment and clean sand placement, bank stabilization, and re-vegetation; the remediation is required by the state. The standard does not apply.

5. **Habitat and beach creation, expansion, restoration, and enhancement projects may be permitted subject to required state or federal permits when the applicant has demonstrated that:**

    a. **The project will not adversely impact spawning, nesting, or breeding fish and wildlife habitat conservation areas;**

    b. **Upstream or downstream properties or fish and wildlife habitat conservation areas will not be adversely affected;**

    c. **Water quality will not be degraded;**

d. **Flood storage capacity will not be degraded;**

e. **Streamflow will not be reduced;**

f. **Impacts to critical areas and buffers will be avoided and where unavoidable, minimized and mitigated; and**

g. **The project will not interfere with the normal public use of the navigable waters of the state.**

Response: The proposed project is not a habitat and beach creation, expansion, restoration, or enhancement project. The standard does not apply. However, the Applicant demonstrates in the JARPA that standards 5(a-g) will be met.

6.4.5 Shoreline Stabilization – General

1. **New shoreline stabilization to protect new residential development is prohibited. For other types of new development new shoreline stabilization is prohibited unless it can be demonstrated through a geotechnical analysis by a qualified professional that:**

   a. **The proposed use cannot be developed without shore protection; or**

   b. **Shore protection is necessary to restore ecological functions; or**

   c. **Shore protection is necessary for a hazardous substance remediation project.**

Response: No new residential development is proposed. The proposed shoreline stabilization measures are part of a remedial action pursuant to a consent decree. The proposed shoreline stabilization measures have been designed by a professional civil engineer licensed in the state of Washington. The proposed shoreline stabilization measures will function as a cap to contain potentially contaminated soil in the river bank and to maintain the integrity of the existing clean soil cap above OHWM. The proposed shoreline stabilization measures have been designed to restore shoreline ecological functions and processes. The criteria are met.

2. **New or expanded shore stabilization shall:**

   a. **Be designed using best available science and in accordance with applicable Ecology and WDFW guidelines;**

   b. **Not result in a net loss of shoreline ecological functions;**

   c. **Not cause significant erosion or beach starvation;**

   d. **Not be located where valuable geohydraulic, hydraulic, or biological processes are sensitive to interference and critical to shoreline conservation;**

e. **Document that alternative solutions (including relocation or reconstruction of existing structures) are not feasible or do not provide sufficient protection;**

f. **Demonstrate that future stabilization measures would not be required on the project site or adjacent properties; and**

g. **Be certified by a qualified professional.**

Response: The Applicant has designed the proposed work using best available science and in accordance with applicable federal, Ecology, and WDFW guidelines. The proposed work is designed to increase shoreline ecological functions and is designed to resist, not cause, erosion. The proposed work is not located where valuable geohydraulic, hydraulic, or biological processes are sensitive to interference and critical to shoreline conservation. The proposed shore stabilization measures are flexible stabilization works constructed of natural materials – including rounded fish mix rock and vegetative stabilization. The proposed measures do not require the new construction of, relocation of, or reconstruction of structural support measures. Future stabilization measures will not be required on the project site or adjacent properties. The proposed work has been designed by a professional civil engineer licensed in the state of Washington. The criteria are met.

3. **New or expanded structural shoreline stabilization for existing primary structures, including roads, railroads, and public facilities is prohibited unless there is conclusive evidence documented by a geotechnical analysis that there is a significant possibility that the structure will be damaged within three years as a result of shoreline erosion caused by stream processor waves, and only when significant adverse impacts are mitigated to ensure no net loss of shoreline ecological functions and/or processes.**

Response: No new or expanded structural shoreline stabilization is proposed. The criterion does not apply.

4. **Where a geotechnical analysis confirms a need to prevent potential damage to a primary structure, but the need is not as immediate as three years, the analysis may still be used to justify more immediate authorization for shoreline stabilization using bioengineering approaches.**

Response: All remnants of existing primary structures will be removed. The criterion does not apply.

5. **Replacement of an existing shoreline stabilization structure with a similar structure is permitted if there is a demonstrated need to protect existing primary uses, structures or public facilities including roads, bridges, railways, and utility systems from erosion caused by stream undercutting or wave action; provided that, the existing shoreline stabilization structure is removed from the shoreline as part of the replacement activity. Replacement walls or bulkheads shall not encroach waterward of the ordinary high-water mark or existing structure unless the structure is a residence that was occupied prior to January 1, 1992, and there are overriding safety or environmental concerns. New or expanded shore stabilization shall be designed in accordance with**

applicable Ecology and WDFW guidelines and certified by a qualified professional.

Response: No replacement of existing structures is proposed. The criterion does not apply.

6. **Shoreline stabilization projects that meet the criteria of Section 2.3.2(18) require a Shoreline Statement of Exemption (Section 2.3.3) and if exempt will be regulated under RCW 77.55.181. Stabilization projects that do not meet these criteria will be regulated by this Program.**

Response: The proposed action is not a project designed to fish or wildlife habitat or fish passage. The criterion does not apply

7. **Small-scale or uncomplicated shoreline stabilization projects (for example, tree planting projects) shall be reviewed by a qualified professional to ensure that the project has been designed using best available science.**

Response: The criterion does not apply.

8. **Large-scale or more complex shoreline stabilization projects (for example, projects requiring fill or excavation, placing objects in the water, or hardening the bank) shall be designed by a qualified professional using best available science. The applicant may be required to have a qualified professional oversee construction or construct the project.**

Response: As noted above, the proposed work has been designed by a professional civil engineer licensed in the state of Washington using the best available science. The proposed work will be overseen by a professional engineer licensed in the state of Washington. The proposed action meets the criteria.

9. **Standards for new stabilization structures when found to be necessary include limiting the size to the minimum necessary to achieve the stabilization objective, using measures to assure no net loss of shoreline ecological functions, using soft approaches, and mitigating for impacts.**

Response: The proposed work has been designed by a professional civil engineer licensed in the state of Washington to minimize the overall stabilization footprint. The proposed work includes soft approaches such as turf reinforcement mat with native vegetation and has been designed to improve shoreline ecological functions.

RIDGEFIELD DEVELOPMENT CODE (RDC)

18.280.120 Frequently flooded areas.

Refer to RDC Chapter 18.750, Flood Control, for all requirements and standards regarding frequently flooded areas (shown below).

18.750.030 General provisions.

A. **Lands to Which this Chapter Applies. This chapter shall apply to all areas of special flood hazards within the jurisdiction of the city of Ridgefield.**

Response: The Applicant understands the applicability of this chapter.

B. **Basis for Establishing the Areas of Special Flood Hazard. The areas of special flood hazard identified by the Federal Insurance Administration in a scientific and engineering report titled "The Flood Insurance Study for Clark County, Washington, and Incorporated Areas" dated September 5, 2012, and any revisions thereto, with accompanying Flood Insurance Rate Map (FIRM) dated September 5, 2012, and any revisions thereto, are adopted by reference and declared to be a part of this chapter. The Flood Insurance Study and the FIRM are on file at Ridgefield City Hall, 230 Pioneer Avenue, Ridgefield, Washington. The best available information for flood hazard area identification as outlined in Section 18.750.040(D)(2) shall be the basis for regulation until a new FIRM is issued which incorporates the data utilized under section 18.750.040(D)(2).**

Response: The Applicant understands that the above referenced documents serve as the basis of the City's Areas of Special Flood Hazard.

C. **Penalties for Noncompliance. No structure or land shall hereafter be constructed, located, extended, converted, or altered without full compliance with the terms of this chapter and other applicable regulations. Violations of the provisions of this chapter by failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with conditions), shall be remedied through the provisions of Chapter 18.395, Enforcement Procedures and Penalties. Nothing herein contained shall prevent the city of Ridgefield from taking such other lawful action as is necessary to prevent or remedy any violation.**

Response: The Applicant understands the penalties for noncompliance.

D. **Abrogation and Greater Restrictions. This chapter is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this chapter and another ordinance, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.**

Response: The Applicant understands that the more restrictive provisions of either this chapter or any other underlying instrument shall supersede.

E. **Interpretation. In the interpretation and application of this chapter, all provisions shall be:**

1. **Considered as minimum requirements;**

2. **Liberally construed in favor of the governing body; and**

3. **Deemed neither to limit nor repeal any other powers granted under state statutes.**

Response: The Applicant understands the criterion.

F. **Warning and Disclaimer of Liability. The degree of flood protection required by this chapter is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by man-made or natural causes. This chapter does not imply that land outside the areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damages. This chapter shall not create liability on the part of the city of Ridgefield, any officer or employee thereof, or the Federal Insurance Administration, for any flood damages that result from reliance on this chapter or any administrative decision lawfully made hereunder.**

Response: The Applicant understands and acknowledges this criterion.

18.750.040 Administration.

A. **Development Permit Required. A development permit shall be obtained before construction or development begins within any area of special flood hazard established in Section 18.750.020(B). The permit shall be for all structures including manufactured homes, as set forth in the "definitions," and for all development including fill and other activities, also as set forth in the "definitions."**

Response: The Applicant understands that a development permit would otherwise be required for the currently proposed project. However, pursuant to RCW 70.150D.090, the project is exempt from obtaining local permits. The applicant is providing demonstration of compliance with the substantive requirements of the underlying ordinance.

18.750.050 Provisions for flood hazard reduction.

A. **Anchoring.**

1. **All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure.**

2. **All manufactured homes shall be anchored to prevent flotation, collapse, or lateral movement, and shall be installed using methods and practices that minimize flood damage. Anchoring methods may include, but are not limited to, use of over-the-top or frame ties to ground anchors. For more detailed information, refer to the latest edition of document,**

FEMA P-85, "Protecting Manufactured Homes from Floods and Other Hazards."

Response: No new structures or substantial improvements are proposed. The criteria do not apply.

B. **Construction Materials and Methods.**

1. **All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.**

2. **All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.**

3. **Electrical, heating, ventilation, plumbing, and air-conditioning equipment and other service facilities shall be designed and/or otherwise elevated or located so as to prevent water from entering or accumulating within the components during conditions of flooding. Locating such equipment below the base flood elevation may cause annual flood insurance premiums to be increased.**

Response: No new structures or substantial improvements are proposed. The proposed shoreline stabilization has been designed to minimize erosion during a potential flood event.

C. **Utilities.**

1. **All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems;**

2. **Water wells shall be located on high ground that is not in the floodway;**

3. **New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharges from the systems into floodwaters;**

4. **On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.**

Response: The criteria do not apply.

D. **Subdivision Proposals.**

Response: The criteria do not apply.

18.750.060 Specific standards.

In all areas of special flood hazards where base flood elevation data has been provided as set forth in Sections 18.750.030(B) or 18.750.040(D)(2), the following provisions shall apply.

A. Residential Construction.

B. Nonresidential Construction.

C. Manufactured Homes.

D. Recreational Vehicles.

Response: The current proposed remedial action does not include construction of the above mentioned uses. The criteria do not apply.

E. **AE Zone with Base Flood Elevations but No Floodways. In areas with base flood elevations (but a regulatory floodway has not been designated), no new construction, substantial improvements, or other development (including fill) shall be permitted within Zone AE on the community's FIRM, unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.**

Response: As shown on FIRM 53011C0184, the frequently flooded areas of the project site are part of the Columbia River flood fringe - within AE Zone. A regulatory floodway has been designated for the Columbia River and is shown on FIRM 53011C0184. The criteria do not apply.

F. **Floodways. Located within areas of special flood hazard are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of floodwaters that can carry debris, and increase erosion potential, the following provisions apply:**

Response: As shown on FEMA FIRM 53011C0184, the frequently flooded areas of the project site are part of the Columbia River flood fringe – within Zone AE but outside the floodway. The proposed action is not within a floodway. The criteria do not apply.

G. **Critical Facility. Construction of new critical facilities shall be, to the extent possible, located outside the limits of the special flood hazard area (SFHA) (one-hundred-year floodplain). Construction of new critical facilities shall be permissible within the SFHA if no feasible alternative site is available. Critical facilities constructed within the SFHA shall have the lowest floor elevated three feet above BFE or to the height of the five-hundred-year flood, whichever is higher. Access to and from the critical facility should also be protected to the height utilized above. Floodproofing and sealing measures must be taken to ensure that toxic substances will not be displaced by or released into floodwaters. Access routes elevated to or above the level of the base flood elevation shall be provided to all critical facilities to the extent possible.**

Response: No new critical facilities are proposed. The criteria do not apply.

18.830.040 Native plants.

The native plant list in this section identifies native plants historically found in this area. The list divides plants into three groups: trees and arborescent shrubs, shrubs, and ground covers. Arborescent shrubs are indicated with an "AS" superscript. These shrubs may not be used to meet criteria or conditions of approval which require trees. For each group, the list includes the scientific (Latin) name, common name, indicator status and the habitat types where the plant is most likely to be found.

The indicator status refers to the frequency with which a plant occurs in a wetland; the categories are derived from the National List of Plant Species That Occur In Wetlands: 1988 National Summary (USFWS, Biological Report 88(24), 1988). The indicator categories are as follows:

A. **Obligate Wetland (OBL): occur almost always (estimated probability greater than ninety-nine percent) under natural conditions in wetlands.**

B. **Facultative Wetland (FACW): Usually occur in wetlands (estimated probability sixty-seven percent to ninety-nine percent), but occasionally found in non-wetlands.**

C. **Facultative (FAC): equally likely to occur in wetlands or non-wetlands (estimated probability thirty-four percent to sixty-six percent).**

D. **Facultative Upland (FACU): usually occur in nonwetlands (estimated probability sixty-seven percent to ninety-nine percent), but occasionally found in wetlands (estimated probability one percent to thirty-three percent).**

E. **Obligate Upland (UPL): occur in wetlands in another region, but occur almost always (estimated probability greater than ninety-nine percent) under natural conditions in nonwetlands in the Northwest region.**

Response: The Applicant has proposed a planting plan for the remedial action (see Exhibits L1.0 and L1.1). Plants suited to the riparian habitat are selected. All plants selected are native species that are identified as historically found in this area. The standard is met.

SUBSTANTIVE REQUIREMENTS OF HYDRAULIC PROJECT APPROVAL
Pacific Wood Treating Site: Lake River Remedial Action

Ecology has solicited the substantive requirements of the Washington Department of Fish and Wildlife Hydraulic Project Approval and has identified the following requirements:

- Work below the ordinary high water line shall only occur between OCTOBER 1, 2014 and JANUARY 15, 2015.

- Dredging equipment shall be well-maintained and in good repair to prevent the loss of lubricants, grease, and any other deleterious materials from entering the stream.

- All containers storing fuel or other deleterious substances on the barge shall be secured during dredging operations to prevent incidental spills.

- If at any time, as a result of project activities, fish are observed in distress, a fish kill occurs, or water quality problems develop (including equipment leaks or spills), immediate notification shall be made to the Washington Military Department's Emergency Management Division at 1-800-258-5990, and to Anne Friesz, Assistant Regional Habitat Program Manager at 360-906-6764.

- Every effort shall be taken during all phases of this project to ensure that sediment-laden water is not allowed to enter the stream.

- Turbidity will be measured during construction and will meet the water quality criteria established by Washington Department of Ecology.

- Extreme care shall be taken to ensure that no petroleum products, hydraulic fluid, fresh cement, sediments, chemicals, or any other toxic or deleterious materials are allowed to enter or leach into the stream.

- Bank or bulkhead stabilization work shall be restricted to work necessary to protect the eroding bank.

- Native vegetation removed during construction will be replaced at a 2:1 lineal footage ratio

APPENDIX B

SAMPLE DAILY ACTIVITY REPORT AND CQA FORMS

CONSTRUCTION DAILY REPORT
Lake River Sediment Remedy Project

Daily Report Number:	LRSR-120914-JCE		
Date:	12/9/2014		
Weather:	AM: Rain		
	PM: Rain		
Temperature:	Min: 46 °F		
	Max: 58 °F		
24hr Precipitation:	0.1"	**Dust Conditions:**	N/A
Completed by:	Josh Elliott, PE	**Number of Contractor Employees**	
Contractor:	Dixon Marine Services	Supervisory: 2	Operators: 4 / Laborers: Several

MAUL FOSTER ALONGI
400 E. Mill Plain Boulevard, Ste. 400
Vancouver, WA 98665
360-694-2691

Work Performed Today

Location	Description of Work	Sta 1:	Sta 2:	Time Started	Time Ended
Material Handling Area	Sediment Transport and Disposal	NA	NA	5:30	16:30
Material Handling Area	Dredge Water/Slurry Treatment	NA	NA	7:30	19:30
Lake River Bank	Sediment Transload	NA	NA	7:30	15:45
In-Water	Sediment Dredging	9+00	10+00	8:30	15:30
In-Water	Placement of ENR Sand	3+50	6+00	8:00	19:00
Lake River Bank	Placement of Fish Mix Rock	2+50	5+00	7:30	17:00

Additional Remarks:

E. Hess and M. Tarbert on site for 07:00 safety meeting. J. Elliott and J. Pounds onsite at 07:30. Clean sand placement continued throughout the day. A barge swap between transload and dredge operations was carried out by the tug at 08:00. Dredging began at 08:35, with 8 cells getting a second pass, 32 cells outside of the dredge prism on the shoreline receiving one pass, and 11 grid cells with at least two passes in the morning. C. Lamb onsite at 11:00. In the afternoon, 39 cells were dredged with two passes. Dredging stopped at 15:30 because the material barge at the dredge was at maximum draft and the material barge at the transload was still being unloaded. J. Pounds offsite at 16:20. E. Hess offsite at 17:20. J. Elliott offsite at 18:10; C. Lamb offsite at 19:00; M. Tarbert offsite at 19:30.

Compliance Turbidity Monitoring

Time	Turbidity Conditions	Remarks
8:00 AM	In-compliance	None
12:00 PM	In-compliance	
4:00 PM	In-compliance	

Inspections and Tests

Inspection/Test Type	Location	Form No.
Water Quality Monitoring		

Additional Remarks:

J. Elliott measured treated water discharge at 15:45. pH = 8.39, turbidity = 3.51 NTU.

Daily Report Number:	LRSR-120914-JCE		
Date:	12/9/2014	**Completed by:**	Josh Elliott, PE

Subcontractors Onsite

Company Name:	**Work Area**	**Employees**
Hydrochem	Material Handling Area	Several
Watertectonics	Material Handling Area	1
Diversified Marine	In-Water	3

Additional Remarks:

Visitors

Time	**Name(s)**	**Agency/Company**	**Remarks**
11:45	L. Crosby, S. Harvester & Z. Pyle	MFA	Site tour

Additional Remarks:

Verbal Communications with Contractor

Time	**Name(s)**	**Remarks**	**Action Item?**
16:00	M. Sutton	Some minor drippage evident on gravel portion of Division St. Please clean up.	Yes

Additional Remarks:
Additional isolated mud splatters on paved portion of Division St. DMS to clean immediately.

Construction Issues Tracking

Location	**Description**	**Resolution**	**Action Item?**

Additional Remarks:

Project Engineer Initials	**Date**
JCE	12/9/2014

Dredging, placing sand, and laying fish mix on shoreline.

Dredging on shoreline to achieve desired grade.

Measuring to ensure the Young bucket alignment is accurate.

Swapping material barges with tug.

MAUL FOSTER ALONGI

APPENDIX C

CONSTRUCTION PROGRESS PHOTO ARRAY

Vegetation removal on northern boundary shoreline using excavator.

Excavator loading vegetation removed from the shoreline to the track truck, which transfers it to the MHA.

Using chainsaw to cut vegetation to grade along shoreline.

Removing vegetation along shoreline south of Division Street.

Debris removal along shoreline south of Division Street.

Vegetation and debris removal on shoreline south of Division St.

Limited vegetation removal near Division St.

Assembling Water Treatment Equipment in MHA

Assembling the water treatment system in the MHA.

Setting up water treatment system in MHA.

Pumping MHA stormwater into holding tank from 10/15/14 rainfall event.

Constructing pathway for pipeline in MHA.

Building stormwater extension north of Division St.

Treated dredge water discharged back to Lake River.

Boating across the site for turbidity monitoring.

Straw mulch south of Division St.

Water treatment setup in MHA.

Dredge barge and pipeline

Pumping stormwater accumulated in the MHA to treatment system.

Dredging in shallow water.

Diesel-powered centrifugal pump.

Sand placement and dredging near transload operation.

Dredging in shallow water.

Dredging near transload operation.

Young's Bucket picking up sand from a materials barge.

In-water ENR Sand Placement

In-water ENR Sand Placement

Crane operator grabbing sand.

In-water ENR Sand Placement

Fish Mix Placement from in-water.

Fish Mix Placement on filter fabric.

Fish Mix Placement on filter fabric.

Long reach excavator grading fish mix.

In-water equipment for pile removal and dredging.

Excavator grading fish mix in water.

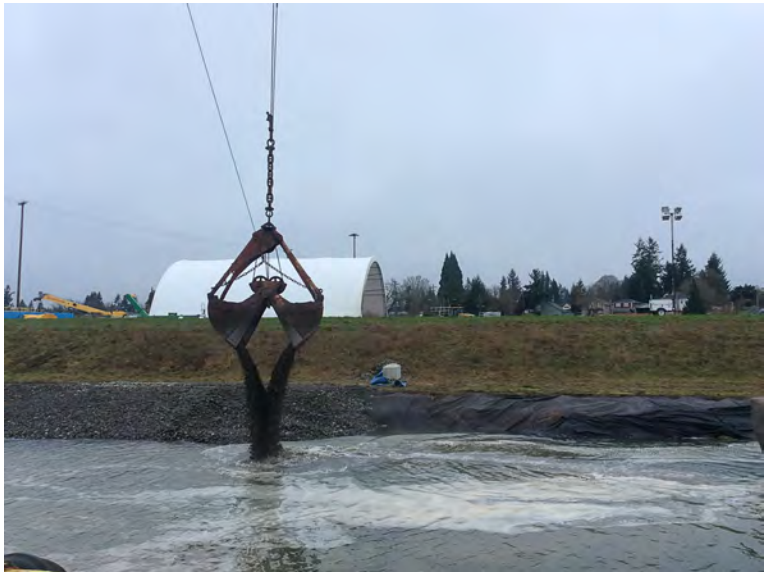
Over water crane placing fish mix in water.

Remaining material at MHA.

View of MHA and dredge barge.

In-water ENR Sand Placement with Young's Bucket.

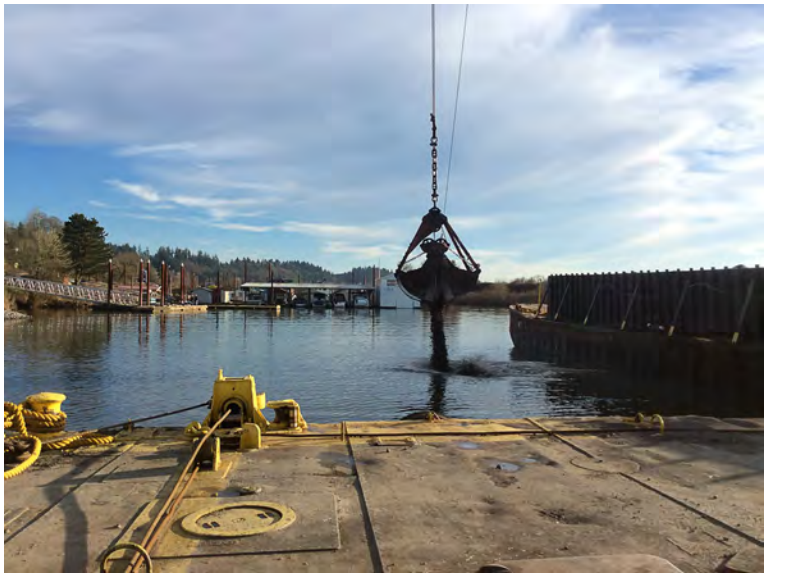
In-water ENR Sand Placement



In-water ENR Sand Placement

ENR sand placement near Division Street.

In-water ENR Sand Placement next to dock.



ENR sand placement between Division Street and Mill Street.

ENR sand placement below power lines.

In-water ENR Sand Placement

Laying out filter fabric before fish mix placement.

Fish mix and excavator placed in off loading facility.

Fish mix placement near marina.

Fish mix placement north of Division St.

Upstream Fish Mix Placement.

Fish Mix Placement in low spots downstream.

Grading fish mix along shoreline south of Division Street.

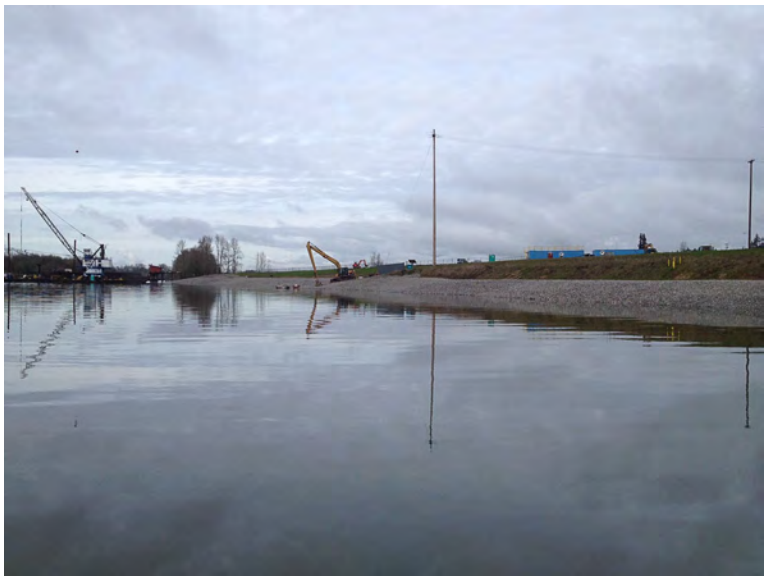
Rock removed from MHA exit.

MFA and DMS discussing fish mix placement in archaeological area.

Fish Mix Grading at kayak launch

Fish Mix Placement in water at kayak launch.

Fish mix rock along shoreline near pump house.



Fish mix rock along shoreline north of Division St.

Fish mix rock looking north from Port marina day dock.

Survey of Fish Mix Placement near kayak launch.

Demobilization of materials in MHA.

Long reach excavator grading rock at the kayak launch.

Demobilization of crane mats and piping.

DMS decontaminating the tent.

Clean soil cap placement.

Dismantling tent structure within MHA.

Clean soil cap placement.

Clean soil cap placement progress.

Lake River hydroseeding.

Lake River hydroseeding..

Lake River hydroseeding.

Lake River planting grove #1.

Lake River planting grove #3.

Lake River planting grove #2.

Lake River planting..

APPENDIX D

LAB REPORTS AND DATA VALIDATION MEMORANDUM

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

www.pacelabs.com

Report Prepared for:

Mary Benzinger
Maul Foster and Alongi
2001 NW 19th Ave
Suite 200
Portland OR 97209

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Prepared Date:
November 4, 2014

Report Information:

Pace Project #: 10285800
Sample Receipt Date: 10/17/2014
Client Project #: A4J0221
Client Sub PO #: N/A
State Cert #: MN200001-005

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 3 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

November 04, 2014

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

ACCREDITED IN ACCORDANCE WITH nelac

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on two samples submitted by a representative of Maul Foster & Alongi. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using USEPA Method 1613B. The reporting limits were based on signal-to-noise measurements. Estimated Maximum Possible Concentration (EMPC) values were treated as positives in the toxic equivalence calculations.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 62-93%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCDD or PCDF congeners; the affected values were flagged "I" where incorrect isotope ratios were obtained. Concentrations below the calibration range were flagged "J" and should be regarded as estimates.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show that PCDDs and PCDFs were not detected.

A laboratory spike sample was also prepared with the sample batch using clean sand that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 93-127%, indicating a high degree of accuracy for these determinations. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	
Arizona	AZ0014	Nevada	MN_00064_200
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New York (NEL	11647
Colorado	MN00064	North Carolina	27700
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Oklahoma	D9922
Georgia (DNR)	959	Oregon (ELAP)	MN200001-005
Guam	959	Oregon (OREL	MN300001-001
Hawaii	SLD	Pennsylvania	68-00563
Idaho	MN00064	Puerto Rico	MN00064
Illinois	200012	Saipan	MP0003
Indiana	C-MN-01	South Carolina	74003001
Indiana	C-MN-01	Tennessee	TN02818
Iowa	368	Texas	T104704192-08
Kansas	E-10167	Utah (NELAP)	MN00064
Kentucky	90062	Virginia	00251
Louisiana	03086	Washington	C755
Maine	2007029	West Virginia	9952C
Maryland	322	Wisconsin	999407970
Michigan	9909	Wyoming	8TMS-Q
Minnesota	027-053-137		

REPORT OF LABORATORY ANALYSIS

Report No.....10285800

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interference present

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDE Interference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = See Discussion

Appendix A

Sample Management

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Sample ID Cross Reference

Client Sample ID	Pace Sample ID	Date Received	Sample Type
SAND 30 COMP	10285800001	10/17/2014	Soil
SAND 30 COMP-DUP	10285800002	10/17/2014	Soil

REPORT OF LABORATORY ANALYSIS

SUBCONTRACT ORDER

Apex Laboratories

A4J0221

10285800

SENDING LABORATORY:

Apex Laboratories
12232 S.W. Garden Place
Tigard, OR 97223
Phone: (503) 718-2323
Fax: (503) 718-0333
Project Manager: Philip Nerenberg

RECEIVING LABORATORY:

Pace Minnesota
~~1700 Elm St. Suite 200~~
Minneapolis, MN 55414
Phone :(612) 607-6347
Fax: 000-0000

Sample Name: Sand 30 Comp **Soil** **Sampled: 10/07/14 11:30** (A4J0221-01)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (Sub)	10/21/14 17:00	04/05/15 11:30	Pace Analytical-10g extraction
Containers Supplied:	already Rec'd		C01
~~(C)4 oz Glass Jar~~			
(D)4 oz Glass Jar			

Sample Name: Sand 30 Comp-Dup **Soil** **Sampled: 10/07/14 11:30** (A4J0221-02)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (Sub)	10/21/14 17:00	04/05/15 11:30	Pace Analytical-10g extraction
Containers Supplied:	already Rec'd		C02
~~(C)4 oz Glass Jar~~			
(D)4 oz Glass Jar			

extra volume

RUSH

Released By	Date	Received By	Date
	10-16-14 1540	UPS (Shipper)	
UPS (Shipper)		Alyssa Ponder	10-17-14
Released By	Date	Received By	Date

Pace Analytical®	Document Name: Sample Condition Upon Receipt Form	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: F-MN-L-213-rev.09	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Apex Lab

Project #: WO#: 10285800

10285800

Courier: ☐ Fed Ex ☒ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number: 1Z X47 20R 13 9149 0115

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☐ Yes ☒ No

Thermom. Used: ☐ B88A9130516413 ☒ B88A912167504 ☐ B88A9132521491 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 4.3 **Cooler Temp Corrected (°C):** 4.7 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.4 **Date and Initials of Person Examining Contents:** AmP 10-17-14

				Comments:
Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☒ Yes	☐ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11.
Sample Labels Match COC?	☒ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: SL				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☒ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 10/20/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Appendix B

Sample Analysis Summary

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1613B Sample Analysis Results

Client - Maul Foster and Alongi

Client's Sample ID	SAND 30 COMP		
Lab Sample ID	10285800001		
Filename	F141103B_06		
Injected By	SMT		
Total Amount Extracted	12.7 g	Matrix	Soil
% Moisture	5.3	Dilution	NA
Dry Weight Extracted	12.0 g	Collected	10/07/2014 11:30
ICAL ID	F141016	Received	10/17/2014 09:20
CCal Filename(s)	F141103B_01	Extracted	10/29/2014 20:45
Method Blank ID	BLANK-42572	Analyzed	11/03/2014 17:44

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.068		2,3,7,8-TCDF-13C	2.00	88
Total TCDF	1.10	-----	0.068	J	2,3,7,8-TCDD-13C	2.00	93
					1,2,3,7,8-PeCDF-13C	2.00	89
2,3,7,8-TCDD	ND	-----	0.120		2,3,4,7,8-PeCDF-13C	2.00	84
Total TCDD	ND	-----	0.120		1,2,3,7,8-PeCDD-13C	2.00	88
					1,2,3,4,7,8-HxCDF-13C	2.00	86
1,2,3,7,8-PeCDF	ND	-----	0.160		1,2,3,6,7,8-HxCDF-13C	2.00	87
2,3,4,7,8-PeCDF	ND	-----	0.150		2,3,4,6,7,8-HxCDF-13C	2.00	92
Total PeCDF	ND	-----	0.150		1,2,3,7,8,9-HxCDF-13C	2.00	84
					1,2,3,4,7,8-HxCDD-13C	2.00	78
1,2,3,7,8-PeCDD	ND	-----	0.120		1,2,3,6,7,8-HxCDD-13C	2.00	76
Total PeCDD	ND	-----	0.120		1,2,3,4,6,7,8-HpCDF-13C	2.00	83
					1,2,3,4,7,8,9-HpCDF-13C	2.00	74
1,2,3,4,7,8-HxCDF	ND	-----	0.120		1,2,3,4,6,7,8-HpCDD-13C	2.00	85
1,2,3,6,7,8-HxCDF	ND	-----	0.110		OCDD-13C	4.00	64
2,3,4,6,7,8-HxCDF	ND	-----	0.110				
1,2,3,7,8,9-HxCDF	ND	-----	0.140		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.120		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.130		2,3,7,8-TCDD-37Cl4	0.20	98
1,2,3,6,7,8-HxCDD	ND	-----	0.140				
1,2,3,7,8,9-HxCDD	ND	-----	0.120				
Total HxCDD	0.25	-----	0.130	J			
1,2,3,4,6,7,8-HpCDF	ND	-----	0.140		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.190		Equivalence: 0.20 ng/Kg		
Total HpCDF	ND	-----	0.160		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	0.56	-----	0.120	J			
Total HpCDD	1.10	-----	0.120	J			
OCDF	ND	-----	0.360				
OCDD	3.40	-----	0.480	J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1613B Sample Analysis Results

Client - Maul Foster and Alongi

Client's Sample ID	SAND 30 COMP-DUP		
Lab Sample ID	10285800002		
Filename	F141103B_07		
Injected By	SMT		
Total Amount Extracted	13.0 g	Matrix	Soil
% Moisture	5.1	Dilution	NA
Dry Weight Extracted	12.3 g	Collected	10/07/2014 11:30
ICAL ID	F141016	Received	10/17/2014 09:20
CCal Filename(s)	F141103B_01	Extracted	10/29/2014 20:45
Method Blank ID	BLANK-42572	Analyzed	11/03/2014 18:25

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	0.11	0.095	IJ	2,3,7,8-TCDF-13C	2.00	84
Total TCDF	0.59	-----	0.095	J	2,3,7,8-TCDD-13C	2.00	93
					1,2,3,7,8-PeCDF-13C	2.00	86
2,3,7,8-TCDD	ND	-----	0.130		2,3,4,7,8-PeCDF-13C	2.00	81
Total TCDD	ND	-----	0.130		1,2,3,7,8-PeCDD-13C	2.00	85
					1,2,3,4,7,8-HxCDF-13C	2.00	83
1,2,3,7,8-PeCDF	ND	-----	0.120		1,2,3,6,7,8-HxCDF-13C	2.00	85
2,3,4,7,8-PeCDF	ND	-----	0.120		2,3,4,6,7,8-HxCDF-13C	2.00	88
Total PeCDF	ND	-----	0.120		1,2,3,7,8,9-HxCDF-13C	2.00	79
					1,2,3,4,7,8-HxCDD-13C	2.00	75
1,2,3,7,8-PeCDD	ND	-----	0.150		1,2,3,6,7,8-HxCDD-13C	2.00	74
Total PeCDD	ND	-----	0.150		1,2,3,4,6,7,8-HpCDF-13C	2.00	82
					1,2,3,4,7,8,9-HpCDF-13C	2.00	71
1,2,3,4,7,8-HxCDF	ND	-----	0.120		1,2,3,4,6,7,8-HpCDD-13C	2.00	83
1,2,3,6,7,8-HxCDF	ND	-----	0.120		OCDD-13C	4.00	62
2,3,4,6,7,8-HxCDF	ND	-----	0.110				
1,2,3,7,8,9-HxCDF	ND	-----	0.130		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.120		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.140		2,3,7,8-TCDD-37Cl4	0.20	97
1,2,3,6,7,8-HxCDD	ND	-----	0.110				
1,2,3,7,8,9-HxCDD	ND	-----	0.120				
Total HxCDD	0.27	-----	0.120	J			
1,2,3,4,6,7,8-HpCDF	ND	-----	0.130		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.200		Equivalence: 0.22 ng/Kg		
Total HpCDF	ND	-----	0.160		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	-----	0.38	0.140	IJ			
Total HpCDD	ND	-----	0.140				
OCDF	ND	-----	0.410				
OCDD	-----	2.60	0.500	IJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

Appendix C

QC and Calibration Results Summary

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1613B Blank Analysis Results

Lab Sample ID	BLANK-42572	Matrix	Solid
Filename	F141102A_04	Dilution	NA
Total Amount Extracted	10.3 g	Extracted	10/29/2014 20:45
ICAL ID	F141016	Analyzed	11/02/2014 17:01
CCal Filename(s)	F141101B_18	Injected By	BAL

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.18	2,3,7,8-TCDF-13C	2.00	69
Total TCDF	ND	-----	0.18	2,3,7,8-TCDD-13C	2.00	80
				1,2,3,7,8-PeCDF-13C	2.00	74
2,3,7,8-TCDD	ND	-----	0.18	2,3,4,7,8-PeCDF-13C	2.00	72
Total TCDD	ND	-----	0.18	1,2,3,7,8-PeCDD-13C	2.00	81
				1,2,3,4,7,8-HxCDF-13C	2.00	68
1,2,3,7,8-PeCDF	ND	-----	0.19	1,2,3,6,7,8-HxCDF-13C	2.00	71
2,3,4,7,8-PeCDF	ND	-----	0.14	2,3,4,6,7,8-HxCDF-13C	2.00	74
Total PeCDF	ND	-----	0.17	1,2,3,7,8,9-HxCDF-13C	2.00	68
				1,2,3,4,7,8-HxCDD-13C	2.00	65
1,2,3,7,8-PeCDD	ND	-----	0.17	1,2,3,6,7,8-HxCDD-13C	2.00	66
Total PeCDD	ND	-----	0.17	1,2,3,4,6,7,8-HpCDF-13C	2.00	74
				1,2,3,4,7,8,9-HpCDF-13C	2.00	70
1,2,3,4,7,8-HxCDF	ND	-----	0.23	1,2,3,4,6,7,8-HpCDD-13C	2.00	84
1,2,3,6,7,8-HxCDF	ND	-----	0.18	OCDD-13C	4.00	64
2,3,4,6,7,8-HxCDF	ND	-----	0.14			
1,2,3,7,8,9-HxCDF	ND	-----	0.20	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.19	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.20	2,3,7,8-TCDD-37Cl4	0.20	85
1,2,3,6,7,8-HxCDD	ND	-----	0.21			
1,2,3,7,8,9-HxCDD	ND	-----	0.20			
Total HxCDD	ND	-----	0.21			
1,2,3,4,6,7,8-HpCDF	ND	-----	0.22	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.23	Equivalence: 0.28 ng/Kg		
Total HpCDF	ND	-----	0.22	(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.20			
Total HpCDD	ND	-----	0.20			
OCDF	ND	-----	0.50			
OCDD	ND	-----	0.52			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCS-42573		
Filename	F141102A_01	Matrix	Solid
Total Amount Extracted	11.5 g	Dilution	NA
ICAL ID	F141016	Extracted	10/29/2014 20:45
CCal Filename	F141101B_18	Analyzed	11/02/2014 14:56
Method Blank ID	BLANK-42572	Injected By	BAL

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	12	7.5	15.8	117
2,3,7,8-TCDD	10	9.3	6.7	15.8	93
1,2,3,7,8-PeCDF	50	61	40.0	67.0	122
2,3,4,7,8-PeCDF	50	63	34.0	80.0	127
1,2,3,7,8-PeCDD	50	49	35.0	71.0	98
1,2,3,4,7,8-HxCDF	50	64	36.0	67.0	127
1,2,3,6,7,8-HxCDF	50	61	42.0	65.0	122
2,3,4,6,7,8-HxCDF	50	59	35.0	78.0	118
1,2,3,7,8,9-HxCDF	50	59	39.0	65.0	118
1,2,3,4,7,8-HxCDD	50	56	35.0	82.0	111
1,2,3,6,7,8-HxCDD	50	63	38.0	67.0	126
1,2,3,7,8,9-HxCDD	50	60	32.0	81.0	120
1,2,3,4,6,7,8-HpCDF	50	55	41.0	61.0	111
1,2,3,4,7,8,9-HpCDF	50	49	39.0	69.0	97
1,2,3,4,6,7,8-HpCDD	50	48	35.0	70.0	96
OCDF	100	110	63.0	170.0	106
OCDD	100	110	78.0	144.0	112
2,3,7,8-TCDD-37Cl4	10	9.3	3.1	19.1	93
2,3,7,8-TCDF-13C	100	81	22.0	152.0	81
2,3,7,8-TCDD-13C	100	95	20.0	175.0	95
1,2,3,7,8-PeCDF-13C	100	85	21.0	192.0	85
2,3,4,7,8-PeCDF-13C	100	78	13.0	328.0	78
1,2,3,7,8-PeCDD-13C	100	90	21.0	227.0	90
1,2,3,4,7,8-HxCDF-13C	100	76	19.0	202.0	76
1,2,3,6,7,8-HxCDF-13C	100	83	21.0	159.0	83
2,3,4,6,7,8-HxCDF-13C	100	87	22.0	176.0	87
1,2,3,7,8,9-HxCDF-13C	100	82	17.0	205.0	82
1,2,3,4,7,8-HxCDD-13C	100	80	21.0	193.0	80
1,2,3,6,7,8-HxCDD-13C	100	75	25.0	163.0	75
1,2,3,4,6,7,8-HpCDF-13C	100	87	21.0	158.0	87
1,2,3,4,7,8,9-HpCDF-13C	100	82	20.0	186.0	82
1,2,3,4,6,7,8-HpCDD-13C	100	98	26.0	166.0	98
OCDD-13C	200	140	26.0	397.0	72

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

REPORT OF LABORATORY ANALYSIS

Method 1613B
Initial Calibration (ICAL) - Response Factor Summary

ICAL ID	**F141016**	Data Files:		Time	Injected
Calibration Date	10/16/2014	CS-1	F141016A_07	16:24	SMT
Instrument	10MSHR05 (F)	CS-2	F141016A_05	14:48	SMT
Column Phase	DB-5MS 0.25mm	CS-3	F141016A_04	13:55	SMT
Column ID No.	USE200914H	CS-4	F141016A_09	17:50	SMT
		CS-5	F141016A_08	17:06	SMT

Isomer	CS-1	CS-2	CS-3	CS-4	CS-5	Ave RF	%RSD
2,3,7,8-TCDF	0.7610	0.7594	0.8144	0.8321	0.8709	0.8075	5.92
2,3,7,8-TCDD	0.8044	0.9629	1.0871	1.0434	1.0863	0.9968	11.93
1,2,3,7,8-PeCDF	0.7482	0.8290	0.8655	0.8817	0.8972	0.8443	7.03
2,3,4,7,8-PeCDF	0.7437	0.8032	0.8682	0.9131	0.9119	0.8480	8.67
1,2,3,7,8-PeCDD	0.7770	0.8596	0.8737	0.8970	0.9057	0.8626	5.94
1,2,3,4,7,8-HxCDF	0.9814	1.0327	1.0726	1.0956	1.0562	1.0477	4.16
1,2,3,6,7,8-HxCDF	0.8891	0.9784	0.9846	1.0507	1.0299	0.9865	6.32
2,3,4,6,7,8-HxCDF	0.9622	1.0410	1.1030	1.1088	1.1097	1.0650	6.03
1,2,3,7,8,9-HxCDF	0.8482	0.9753	1.0207	1.0641	1.0534	0.9923	8.83
1,2,3,4,7,8-HxCDD	0.9097	0.9156	0.9582	0.9588	0.9504	0.9386	2.55
1,2,3,6,7,8-HxCDD	0.8120	0.8587	0.9031	0.9233	0.8979	0.8790	5.03
1,2,3,7,8,9-HxCDD	0.8847	0.8842	0.9487	0.9612	0.9508	0.9259	4.12
1,2,3,4,6,7,8-HpCDF	1.1952	1.2463	1.3178	1.3794	1.3298	1.2937	5.62
1,2,3,4,7,8,9-HpCDF	1.2849	1.3105	1.3650	1.3839	1.3486	1.3386	3.02
1,2,3,4,6,7,8-HpCDD	1.0467	1.1247	1.1443	1.1932	1.1573	1.1332	4.80
OCDF	0.8502	0.8386	0.9160	1.0083	1.0021	0.9230	8.74
OCDD	0.8738	0.9405	0.9496	1.0132	0.9655	0.9485	5.30
Total PeCDF	0.7459	0.8161	0.8669	0.8974	0.9045	0.8462	7.80
Total HxCDF	0.9203	1.0069	1.0452	1.0798	1.0623	1.0229	6.20
Total HxCDD	0.8688	0.8862	0.9367	0.9478	0.9330	0.9145	3.80
Total HpCDF	1.2401	1.2784	1.3414	1.3817	1.3392	1.3161	4.28
2,3,7,8-TCDF-13C	1.2669	1.2839	1.3053	1.2725	1.2964	1.2850	1.25
2,3,7,8-TCDD-13C	0.9802	0.8916	0.9093	0.9095	0.9300	0.9241	3.70
2,3,7,8-TCDD-37Cl4	0.9013	1.0201	1.0381	1.0958	1.1258	1.0362	8.36
1,2,3,7,8-PeCDF-13C	1.0265	1.0119	1.0420	1.0161	1.0534	1.0300	1.70
2,3,4,7,8-PeCDF-13C	1.0338	1.0201	1.0407	1.0029	1.0523	1.0300	1.86
1,2,3,7,8-PeCDD-13C	0.7812	0.7720	0.7952	0.7712	0.8211	0.7881	2.64
1,2,3,4,7,8-HxCDF-13C	0.9529	0.9765	1.0072	1.0066	1.0558	0.9998	3.87
1,2,3,6,7,8-HxCDF-13C	1.2409	1.2693	1.2989	1.2640	1.2409	1.2628	1.90
2,3,4,6,7,8-HxCDF-13C	0.9873	1.0692	1.0546	1.0942	1.0679	1.0546	3.82
1,2,3,7,8,9-HxCDF-13C	1.0099	0.9713	0.9974	1.0180	1.0315	1.0056	2.27
1,2,3,4,7,8-HxCDD-13C	0.8691	0.9274	0.8998	0.9719	0.9840	0.9304	5.18
1,2,3,6,7,8-HxCDD-13C	1.0941	1.1351	1.1414	1.1279	1.1314	1.1260	1.65
1,2,3,4,6,7,8-HpCDF-13C	0.9558	0.9993	0.9863	1.0115	1.0405	0.9987	3.13
1,2,3,4,7,8,9-HpCDF-13C	0.7682	0.7610	0.7595	0.8162	0.8651	0.7940	5.80
1,2,3,4,6,7,8-HpCDD-13C	0.7386	0.7427	0.7445	0.7911	0.8219	0.7678	4.83
OCDD-13C	0.6780	0.7318	0.7242	0.7791	0.8540	0.7534	8.85

REPORT OF LABORATORY ANALYSIS

Method 1613B
Initial Calibration (ICAL) - Isotope Ratio Summary

ICAL ID	**F141016**	Data Files:		Time	Injected
Calibration Date	10/16/2014	CS-1	F141016A_07	16:24	SMT
Instrument	10MSHR05 (F)	CS-2	F141016A_05	14:48	SMT
Column Phase	DB-5MS 0.25mm	CS-3	F141016A_04	13:55	SMT
Column ID No.	USE200914H	CS-4	F141016A_09	17:50	SMT
		CS-5	F141016A_08	17:06	SMT

Isomer	CS-1	CS-2	CS-3	CS-4	CS-5	Limits
2,3,7,8-TCDF	0.81	0.72	0.75	0.73	0.74	0.65 - 0.89
2,3,7,8-TCDD	0.65	0.74	0.77	0.74	0.77	0.65 - 0.89
1,2,3,7,8-PeCDF	1.47	1.58	1.53	1.55	1.53	1.32 - 1.78
2,3,4,7,8-PeCDF	1.55	1.62	1.54	1.53	1.54	1.32 - 1.78
1,2,3,7,8-PeCDD	0.57	0.60	0.61	0.61	0.61	0.52 - 0.70
1,2,3,4,7,8-HxCDF	1.33	1.23	1.34	1.25	1.24	1.05 - 1.43
1,2,3,6,7,8-HxCDF	1.22	1.22	1.26	1.28	1.25	1.05 - 1.43
2,3,4,6,7,8-HxCDF	1.32	1.27	1.28	1.27	1.24	1.05 - 1.43
1,2,3,7,8,9-HxCDF	1.35	1.18	1.27	1.26	1.24	1.05 - 1.43
1,2,3,4,7,8-HxCDD	1.26	1.27	1.21	1.22	1.24	1.05 - 1.43
1,2,3,6,7,8-HxCDD	1.32	1.28	1.22	1.24	1.23	1.05 - 1.43
1,2,3,7,8,9-HxCDD	1.21	1.21	1.25	1.23	1.25	1.05 - 1.43
1,2,3,4,6,7,8-HpCDF	0.97	1.06	1.03	1.02	1.04	0.88 - 1.20
1,2,3,4,7,8,9-HpCDF	0.94	1.00	1.03	1.04	1.01	0.88 - 1.20
1,2,3,4,6,7,8-HpCDD	1.05	1.06	1.08	1.08	1.05	0.88 - 1.20
OCDF	0.93	0.90	0.88	0.88	0.90	0.76 - 1.02
OCDD	0.91	0.81	0.92	0.87	0.87	0.76 - 1.02
1,2,3,4-TCDD-13C	0.80	0.80	0.79	0.80	0.80	0.65 - 0.89
1,2,3,7,8,9-HxCDD-13C	1.20	1.25	1.23	1.20	1.21	1.05 - 1.43
2,3,7,8-TCDF-13C	0.78	0.78	0.78	0.75	0.79	0.65 - 0.89
2,3,7,8-TCDD-13C	0.79	0.78	0.79	0.82	0.79	0.65 - 0.89
1,2,3,7,8-PeCDF-13C	1.50	1.58	1.56	1.55	1.57	1.32 - 1.78
2,3,4,7,8-PeCDF-13C	1.54	1.55	1.56	1.56	1.57	1.32 - 1.78
1,2,3,7,8-PeCDD-13C	1.57	1.61	1.55	1.58	1.60	1.32 - 1.78
1,2,3,4,7,8-HxCDF-13C	0.51	0.51	0.51	0.51	0.52	0.43 - 0.59
1,2,3,6,7,8-HxCDF-13C	0.52	0.51	0.51	0.52	0.51	0.43 - 0.59
2,3,4,6,7,8-HxCDF-13C	0.50	0.51	0.52	0.51	0.52	0.43 - 0.59
1,2,3,7,8,9-HxCDF-13C	0.51	0.51	0.52	0.53	0.51	0.43 - 0.59
1,2,3,4,7,8-HxCDD-13C	1.26	1.21	1.24	1.24	1.25	1.05 - 1.43
1,2,3,6,7,8-HxCDD-13C	1.24	1.22	1.26	1.25	1.23	1.05 - 1.43
1,2,3,4,6,7,8-HpCDF-13C	0.45	0.45	0.47	0.44	0.45	0.37 - 0.51
1,2,3,4,7,8,9-HpCDF-13C	0.45	0.45	0.46	0.46	0.46	0.37 - 0.51
1,2,3,4,6,7,8-HpCDD-13C	1.09	1.08	1.13	1.08	1.10	0.88 - 1.20
OCDD-13C	0.87	0.90	0.89	0.89	0.90	0.76 - 1.02

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1613B Analysis Results
PCDD/PCDF Calibration Verification
Labeled Analytes

Lab Name	CS3/CPM-7604-328		
Filename	F141101B_18	Instrument ID	10MSHR05 (F)
Injected By	BAL	GC Column ID	USE200914H
Analyzed	11/02/2014 14:15	ICAL ID	F141016

Native Isomers	m/z's Forming Ratio (1)	Ion Abund. Ratio	QC Limits (2)	Conc Found	Conc. Range (ng/ml) (3)
Labeled Compounds					
1,2,3,4-TCDD-13C	M/M+2	0.79	0.65 - 0.89	-----	-----
2,3,7,8-TCDD-13C	M/M+2	0.82	0.65 - 0.89	97.3	82 - 121
1,2,3,7,8-PeCDD-13C	M+2/M+4	1.54	1.32 - 1.78	89.2	62 - 160
1,2,3,4,7,8-HxCDD-13C	M+2/M+4	1.25	1.05 - 1.43	90.7	85 - 117
1,2,3,6,7,8-HxCDD-13C	M+2/M+4	1.24	1.05 - 1.43	108.3	85 - 118
1,2,3,7,8,9-HxCDD-13C	M+2/M+4	1.26	1.05 - 1.43	-----	-----
1,2,3,4,6,7,8-HpCDD-13C	M+2/M+4	1.06	0.88 - 1.20	102.6	72 - 138
OCDD-13C	M+2/M+4	0.90	0.76 - 1.02	156.2	96 - 415
2,3,7,8-TCDF-13C	M/M+2	0.77	0.65 - 0.89	96.0	71 - 140
1,2,3,7,8-PeCDF-13C	M+2/M+4	1.55	1.32 - 1.78	91.6	76 - 130
2,3,4,7,8-PeCDF-13C	M+2/M+4	1.52	1.32 - 1.78	90.5	77 - 130
1,2,3,4,7,8-HxCDF-13C	M/M+2	0.51	0.43 - 0.59	94.8	76 - 131
1,2,3,6,7,8-HxCDF-13C	M/M+2	0.52	0.43 - 0.59	108.3	70 - 143
2,3,4,6,7,8-HxCDF-13C	M/M+2	0.51	0.43 - 0.59	104.7	73 - 137
1,2,3,7,8,9-HxCDF-13C	M/M+2	0.50	0.43 - 0.59	94.4	74 - 135
1,2,3,4,6,7,8-HpCDF-13C	M/M+2	0.43	0.37 - 0.51	101.1	78 - 129
1,2,3,4,7,8,9-HpCDF-13C	M/M+2	0.41	0.37 - 0.51	87.1	77 - 129
Cleanup Standard					
2,3,7,8-TCDD-37Cl4	M+2/M+4	(4)		9.7	7.9 - 12.7

1. See Table 8, Method 1613, for m/z specifications.

2. Ion Abundance Ratio Control Limits from Table 9, Method 1613.

3. Contract-required concentration range as specified in Table 6, Method 1613, under VER (10/94 Revision).

4. No ion abundance ratio; report concentration found.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1613B Analysis Results
PCDD/PCDF Calibration Verification
Native Analytes

Lab Name	CS3/CPM-7604-328		
Filename	F141101B_18	Instrument ID	10MSHR05 (F)
Injected By	BAL	GC Column ID	USE200914H
Analyzed	11/02/2014 14:15	ICAL ID	F141016

Native Isomers	m/z's Forming Ratio (1)	Ion Abund. Ratio	QC Limits (2)	Conc Found	Conc. Range (ng/ml) (3)
2,3,7,8-TCDD	M/M+2	0.82	0.65 - 0.89	11.1	7.8 - 12.9
1,2,3,7,8-PeCDD	M+2/M+4	0.60	0.52 - 0.70	49.9	39 - 65
1,2,3,4,7,8-HxCDD	M+2/M+4	1.27	1.05 - 1.43	49.4	39 - 64
1,2,3,6,7,8-HxCDD	M+2/M+4	1.25	1.05 - 1.43	50.7	39 - 64
1,2,3,7,8,9-HxCDD	M+2/M+4	1.26	1.05 - 1.43	50.1	41 - 61
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.05	0.88 - 1.20	46.8	43 - 58
OCDD	M+2/M+4	0.89	0.76 - 1.02	96.0	79 - 126
2,3,7,8-TCDF	M/M+2	0.76	0.65 - 0.89	10.2	8.4 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.53	1.32 - 1.78	54.0	41 - 60
2,3,4,7,8-PeCDF	M+2/M+4	1.58	1.32 - 1.78	54.1	41 - 61
1,2,3,4,7,8-HxCDF	M+2/M+4	1.27	1.05 - 1.43	55.6	45 - 56
1,2,3,6,7,8-HxCDF	M+2/M+4	1.30	1.05 - 1.43	56.8	44 - 57
2,3,4,6,7,8-HxCDF	M+2/M+4	1.24	1.05 - 1.43	54.3	44 - 57
1,2,3,7,8,9-HxCDF	M+2/M+4	1.26	1.05 - 1.43	53.8	45 - 56
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.03	0.88 - 1.20	48.3	45 - 55
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.06	0.88 - 1.20	45.9	43 - 58
OCDF	M+2/M+4	0.90	0.76 - 1.02	92.1	63 - 159

1. See Table 8, Method 1613, for m/z specifications.

2. Ion Abundance Ratio Control Limits from Table 9, Method 1613.

3. Contract-required concentration range as specified in Table 6, Method 1613, under VER (10/94 Revision).

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1613B Analysis Results
PCDD/PCDF Calibration Verification
Labeled Analytes

Lab Name	CS3/CPM-7604-328		
Filename	F141103B_01	Instrument ID	10MSHR05 (F)
Injected By	SMT	GC Column ID	USE200914H
Analyzed	11/03/2014 14:15	ICAL ID	F141016

Native Isomers	m/z's Forming Ratio (1)	Ion Abund. Ratio	QC Limits (2)	Conc Found	Conc. Range (ng/ml) (3)
Labeled Compounds					
1,2,3,4-TCDD-13C	M/M+2	0.78	0.65 - 0.89	-----	-----
2,3,7,8-TCDD-13C	M/M+2	0.80	0.65 - 0.89	101.8	82 - 121
1,2,3,7,8-PeCDD-13C	M+2/M+4	1.54	1.32 - 1.78	98.0	62 - 160
1,2,3,4,7,8-HxCDD-13C	M+2/M+4	1.24	1.05 - 1.43	96.4	85 - 117
1,2,3,6,7,8-HxCDD-13C	M+2/M+4	1.25	1.05 - 1.43	102.1	85 - 118
1,2,3,7,8,9-HxCDD-13C	M+2/M+4	1.27	1.05 - 1.43	-----	-----
1,2,3,4,6,7,8-HpCDD-13C	M+2/M+4	1.07	0.88 - 1.20	111.8	72 - 138
OCDD-13C	M+2/M+4	0.87	0.76 - 1.02	221.0	96 - 415
2,3,7,8-TCDF-13C	M/M+2	0.77	0.65 - 0.89	107.8	71 - 140
1,2,3,7,8-PeCDF-13C	M+2/M+4	1.58	1.32 - 1.78	106.7	76 - 130
2,3,4,7,8-PeCDF-13C	M+2/M+4	1.60	1.32 - 1.78	105.2	77 - 130
1,2,3,4,7,8-HxCDF-13C	M/M+2	0.51	0.43 - 0.59	103.0	76 - 131
1,2,3,6,7,8-HxCDF-13C	M/M+2	0.52	0.43 - 0.59	104.2	70 - 143
2,3,4,6,7,8-HxCDF-13C	M/M+2	0.52	0.43 - 0.59	106.1	73 - 137
1,2,3,7,8,9-HxCDF-13C	M/M+2	0.51	0.43 - 0.59	106.3	74 - 135
1,2,3,4,6,7,8-HpCDF-13C	M/M+2	0.45	0.37 - 0.51	112.1	78 - 129
1,2,3,4,7,8,9-HpCDF-13C	M/M+2	0.45	0.37 - 0.51	113.8	77 - 129
Cleanup Standard					
2,3,7,8-TCDD-37Cl4	M+2/M+4	(4)		10.3	7.9 - 12.7

1. See Table 8, Method 1613, for m/z specifications.

2. Ion Abundance Ratio Control Limits from Table 9, Method 1613.

3. Contract-required concentration range as specified in Table 6, Method 1613, under VER (10/94 Revision).

4. No ion abundance ratio; report concentration found.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1613B Analysis Results
PCDD/PCDF Calibration Verification
Native Analytes

Lab Name	CS3/CPM-7604-328		
Filename	F141103B_01	Instrument ID	10MSHR05 (F)
Injected By	SMT	GC Column ID	USE200914H
Analyzed	11/03/2014 14:15	ICAL ID	F141016

Native Isomers	m/z's Forming Ratio (1)	Ion Abund. Ratio	QC Limits (2)	Conc Found	Conc. Range (ng/ml) (3)
2,3,7,8-TCDD	M/M+2	0.79	0.65 - 0.89	11.2	7.8 - 12.9
1,2,3,7,8-PeCDD	M+2/M+4	0.62	0.52 - 0.70	51.7	39 - 65
1,2,3,4,7,8-HxCDD	M+2/M+4	1.23	1.05 - 1.43	50.7	39 - 64
1,2,3,6,7,8-HxCDD	M+2/M+4	1.25	1.05 - 1.43	52.4	39 - 64
1,2,3,7,8,9-HxCDD	M+2/M+4	1.22	1.05 - 1.43	53.4	41 - 61
1,2,3,4,6,7,8-HpCDD	M+2/M+4	1.06	0.88 - 1.20	50.4	43 - 58
OCDD	M+2/M+4	0.89	0.76 - 1.02	98.5	79 - 126
2,3,7,8-TCDF	M/M+2	0.74	0.65 - 0.89	11.1	8.4 - 12.0
1,2,3,7,8-PeCDF	M+2/M+4	1.61	1.32 - 1.78	55.8	41 - 60
2,3,4,7,8-PeCDF	M+2/M+4	1.58	1.32 - 1.78	56.1	41 - 61
1,2,3,4,7,8-HxCDF	M+2/M+4	1.27	1.05 - 1.43	55.1	45 - 56
1,2,3,6,7,8-HxCDF	M+2/M+4	1.29	1.05 - 1.43	56.0	44 - 57
2,3,4,6,7,8-HxCDF	M+2/M+4	1.29	1.05 - 1.43	56.0	44 - 57
1,2,3,7,8,9-HxCDF	M+2/M+4	1.28	1.05 - 1.43	55.1	45 - 56
1,2,3,4,6,7,8-HpCDF	M+2/M+4	1.03	0.88 - 1.20	49.5	45 - 55
1,2,3,4,7,8,9-HpCDF	M+2/M+4	1.03	0.88 - 1.20	48.4	43 - 58
OCDF	M+2/M+4	0.90	0.76 - 1.02	105.9	63 - 159

1. See Table 8, Method 1613, for m/z specifications.

2. Ion Abundance Ratio Control Limits from Table 9, Method 1613.

3. Contract-required concentration range as specified in Table 6, Method 1613, under VER (10/94 Revision).

REPORT OF LABORATORY ANALYSIS

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Friday, October 24, 2014

Madi Novak
Maul Foster & Alongi, INC.
2001 NW 19th Ave, STE 200
Portland, OR 97209

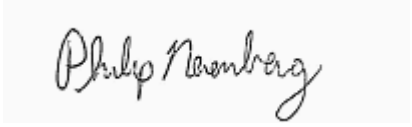
RE: Port of Ridgefield Discrete / 9003.01.40

Enclosed are the results of analyses for work order A4J0221, which was received by the laboratory on 10/7/2014 at 4:20:00PM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: pnerenberg@apex-labs.com, or by phone at 503-718-2323.

Apex Laboratories



Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

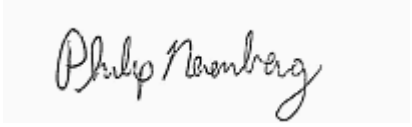
Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Sand 30 Comp	A4J0221-01	Soil	10/07/14 11:30	10/07/14 16:20
Sand 30 Comp-Dup	A4J0221-02	Soil	10/07/14 11:30	10/07/14 16:20

Apex Laboratories



Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

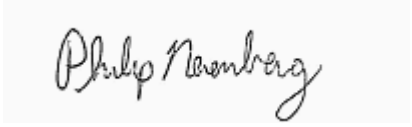
Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

ANALYTICAL SAMPLE RESULTS

Diesel and Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Sand 30 Comp (A4J0221-01)			**Matrix: Soil**		**Batch: 4100351**			
Diesel	ND	---	25.0	mg/kg dry	1	10/14/14 05:31	NWTPH-Dx	
Oil	ND	---	50.0	"	"	"	"	
Surrogate: o-Terphenyl (Surr)			*Recovery: 95 %*	*Limits: 50-150 %*	"	"	"	
Sand 30 Comp-Dup (A4J0221-02)			**Matrix: Soil**		**Batch: 4100351**			
Diesel	ND	---	25.0	mg/kg dry	1	10/14/14 05:51	NWTPH-Dx	
Oil	ND	---	50.0	"	"	"	"	
Surrogate: o-Terphenyl (Surr)			*Recovery: 98 %*	*Limits: 50-150 %*	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

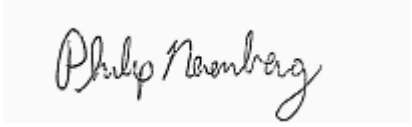
Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

ANALYTICAL SAMPLE RESULTS

Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Sand 30 Comp (A4J0221-01RE1)			**Matrix: Soil**		**Batch: 4100379**			C-07
Aroclor 1016	ND	1.53	3.06	ug/kg dry	1	10/16/14 20:09	EPA 8082A	
Aroclor 1221	ND	1.53	3.06	"	"	"	"	
Aroclor 1232	ND	1.53	3.06	"	"	"	"	
Aroclor 1242	ND	1.53	3.06	"	"	"	"	
Aroclor 1248	ND	1.53	3.06	"	"	"	"	
Aroclor 1254	ND	1.53	3.06	"	"	"	"	
Aroclor 1260	ND	1.53	3.06	"	"	"	"	
Aroclor 1262	ND	1.53	3.06	"	"	"	"	
Aroclor 1268	ND	1.53	3.06	"	"	"	"	
Surrogate: Decachlorobiphenyl (Surr)			*Recovery: 80 %*	*Limits: 44-111 %*	"	"	"	
Sand 30 Comp-Dup (A4J0221-02RE2)			**Matrix: Soil**		**Batch: 4100379**			C-07
Aroclor 1016	ND	1.85	3.69	ug/kg dry	1	10/16/14 21:59	EPA 8082A	
Aroclor 1221	ND	1.85	3.69	"	"	"	"	
Aroclor 1232	ND	1.85	3.69	"	"	"	"	
Aroclor 1242	ND	1.85	3.69	"	"	"	"	
Aroclor 1248	ND	1.85	3.69	"	"	"	"	
Aroclor 1254	ND	1.85	3.69	"	"	"	"	
Aroclor 1260	ND	1.85	3.69	"	"	"	"	
Aroclor 1262	ND	1.85	3.69	"	"	"	"	
Aroclor 1268	ND	1.85	3.69	"	"	"	"	
Surrogate: Decachlorobiphenyl (Surr)			*Recovery: 91 %*	*Limits: 44-111 %*	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

ANALYTICAL SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Sand 30 Comp (A4J0221-01RE1)			**Matrix: Soil**		**Batch: 4100469**			C-05
gamma-BHC (Lindane)	ND	0.761	1.52	ug/kg dry	1	10/20/14 20:41	EPA 8081B	
4,4'-DDD	ND	0.761	1.52	"	"	"	"	
4,4'-DDE	ND	0.761	1.52	"	"	"	"	
4,4'-DDT	ND	0.761	1.52	"	"	"	"	
Dieldrin	ND	0.761	1.52	"	"	"	"	
Endrin ketone	ND	0.761	1.52	"	"	"	"	
Surrogate: 2,4,5,6-TCMX (Surr)			*Recovery: 83 %*	*Limits: 42-129 %*	"	"	"	*Q-31*
Decachlorobiphenyl (Surr)			*113 %*	*Limits: 65-151 %*	"	"	"	
Sand 30 Comp-Dup (A4J0221-02RE1)			**Matrix: Soil**		**Batch: 4100469**			C-05
gamma-BHC (Lindane)	ND	0.735	1.47	ug/kg dry	1	10/20/14 20:59	EPA 8081B	
4,4'-DDD	ND	0.735	1.47	"	"	"	"	
4,4'-DDE	ND	0.735	1.47	"	"	"	"	
4,4'-DDT	ND	0.735	1.47	"	"	"	"	
Dieldrin	ND	0.735	1.47	"	"	"	"	
Endrin ketone	ND	0.735	1.47	"	"	"	"	
Surrogate: 2,4,5,6-TCMX (Surr)			*Recovery: 74 %*	*Limits: 42-129 %*	"	"	"	*Q-31*
Decachlorobiphenyl (Surr)			*110 %*	*Limits: 65-151 %*	"	"	"	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Philip Nerenberg, Lab Director

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

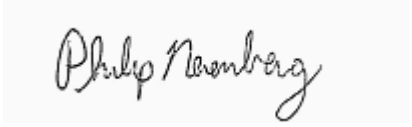
Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Sand 30 Comp (A4J0221-01RE1)			**Matrix: Soil**		**Batch: 4100378**			
Dibenzofuran	ND	1.35	2.71	ug/kg dry	1	10/15/14 17:04	EPA 8270D	
3+4-Methylphenol(s)	ND	3.38	6.78	"	"	"	"	
Pentachlorophenol (PCP)	ND	13.5	27.1	"	"	"	"	
Phenol	ND	2.71	5.42	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	40.6	40.6	"	"	"	"	
Di-n-butylphthalate	ND	13.5	27.1	"	"	"	"	
Di-n-octyl phthalate	ND	13.5	27.1	"	"	"	"	
Benzoic acid	ND	170	338	"	"	"	"	
Surrogate: Nitrobenzene-d5 (Surr)			*Recovery: 84 %*	*Limits: 37-122 %*	"	"	"	
2-Fluorobiphenyl (Surr)			*74 %*	*Limits: 44-115 %*	"	"	"	
Phenol-d6 (Surr)			*69 %*	*Limits: 33-122 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*83 %*	*Limits: 54-127 %*	"	"	"	
2-Fluorophenol (Surr)			*61 %*	*Limits: 35-115 %*	"	"	"	
2,4,6-Tribromophenol (Surr)			*99 %*	*Limits: 39-132 %*	"	"	"	
Sand 30 Comp-Dup (A4J0221-02RE2)			**Matrix: Soil**		**Batch: 4100378**			
Dibenzofuran	ND	1.39	2.78	ug/kg dry	1	10/15/14 18:16	EPA 8270D	
3+4-Methylphenol(s)	ND	3.47	6.95	"	"	"	"	
Pentachlorophenol (PCP)	ND	13.9	27.8	"	"	"	"	
Phenol	ND	2.78	5.55	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	41.7	41.7	"	"	"	"	
Di-n-butylphthalate	**14.2**	13.9	27.8	"	"	"	"	J
Di-n-octyl phthalate	ND	13.9	27.8	"	"	"	"	
Benzoic acid	ND	174	347	"	"	"	"	
Surrogate: Nitrobenzene-d5 (Surr)			*Recovery: 94 %*	*Limits: 37-122 %*	"	"	"	
2-Fluorobiphenyl (Surr)			*81 %*	*Limits: 44-115 %*	"	"	"	
Phenol-d6 (Surr)			*73 %*	*Limits: 33-122 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*93 %*	*Limits: 54-127 %*	"	"	"	
2-Fluorophenol (Surr)			*65 %*	*Limits: 35-115 %*	"	"	"	
2,4,6-Tribromophenol (Surr)			*106 %*	*Limits: 39-132 %*	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

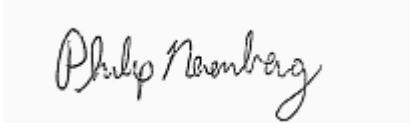
Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Sand 30 Comp (A4J0221-01RE1)			**Matrix: Soil**		**Batch: 4100499**			
Acenaphthene	ND	4.25	8.50	ug/kg dry	1	10/17/14 12:33	EPA 8270D (SIM)	
Acenaphthylene	ND	4.25	8.50	"	"	"	"	
Anthracene	ND	4.25	8.50	"	"	"	"	
Benz(a)anthracene	ND	4.25	8.50	"	"	"	"	
Benzo(a)pyrene	ND	4.25	8.50	"	"	"	"	
Benzo(b)fluoranthene	ND	4.25	8.50	"	"	"	"	
Benzo(k)fluoranthene	ND	4.25	8.50	"	"	"	"	
Benzo(g,h,i)perylene	ND	4.25	8.50	"	"	"	"	
Carbazole	ND	4.25	8.50	"	"	"	"	
Chrysene	ND	4.25	8.50	"	"	"	"	
Dibenz(a,h)anthracene	ND	4.25	8.50	"	"	"	"	
Fluoranthene	ND	4.25	8.50	"	"	"	"	
Fluorene	ND	4.25	8.50	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	4.25	8.50	"	"	"	"	
Naphthalene	ND	4.25	8.50	"	"	"	"	
Phenanthrene	ND	4.25	8.50	"	"	"	"	
Pyrene	ND	4.25	8.50	"	"	"	"	
Surrogate: 2-Fluorobiphenyl (Surr)			*Recovery: 90 %*	*Limits: 44-115 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*95 %*	*Limits: 54-127 %*	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

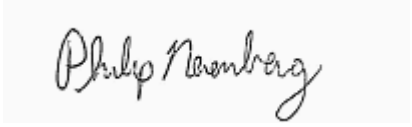
Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Sand 30 Comp-Dup (A4J0221-02)			**Matrix: Soil**		**Batch: 4100425**			
Acenaphthene	ND	5.23	10.5	ug/kg dry	1	10/15/14 17:33	EPA 8270D (SIM)	
Acenaphthylene	ND	5.23	10.5	"	"	"	"	
Anthracene	ND	5.23	10.5	"	"	"	"	
Benz(a)anthracene	ND	5.23	10.5	"	"	"	"	
Benzo(a)pyrene	ND	5.23	10.5	"	"	"	"	
Benzo(b)fluoranthene	ND	5.23	10.5	"	"	"	"	
Benzo(k)fluoranthene	ND	5.23	10.5	"	"	"	"	
Benzo(g,h,i)perylene	ND	5.23	10.5	"	"	"	"	
Carbazole	ND	5.23	10.5	"	"	"	"	
Chrysene	ND	5.23	10.5	"	"	"	"	
Dibenz(a,h)anthracene	ND	5.23	10.5	"	"	"	"	
Fluoranthene	ND	5.23	10.5	"	"	"	"	
Fluorene	ND	5.23	10.5	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	5.23	10.5	"	"	"	"	
Naphthalene	ND	5.23	10.5	"	"	"	"	
Phenanthrene	ND	5.23	10.5	"	"	"	"	
Pyrene	ND	5.23	10.5	"	"	"	"	
Surrogate: 2-Fluorobiphenyl (Surr)			*Recovery: 86 %*	*Limits: 44-115 %*	"	"	"	
p-Terphenyl-d14 (Surr)			*102 %*	*Limits: 54-127 %*	"	"	"	

Apex Laboratories



Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

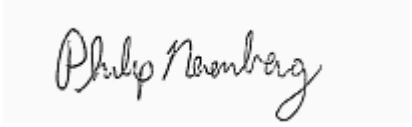
Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Sand 30 Comp (A4J0221-01)			**Matrix: Soil**					
Batch: 4100470								
Arsenic	**1.26**	0.526	1.05	mg/kg dry	10	10/17/14 16:56	EPA 6020A	
Cadmium	**0.147**	0.105	0.210	"	"	"	"	J
Chromium	**2.85**	0.526	1.05	"	"	"	"	
Copper	**4.05**	0.526	1.05	"	"	"	"	
Lead	**2.53**	0.105	0.210	"	"	"	"	
Mercury	ND	0.0421	0.0841	"	"	"	"	
Selenium	ND	0.526	1.05	"	"	"	"	
Silver	ND	0.105	0.210	"	"	"	"	
Zinc	**27.9**	2.10	4.21	"	"	"	"	
Sand 30 Comp (A4J0221-01RE1)			**Matrix: Soil**					
Batch: 4100470								
Nickel	**5.39**	0.526	1.05	mg/kg dry	10	10/21/14 16:14	EPA 6020A	
Sand 30 Comp-Dup (A4J0221-02)			**Matrix: Soil**					
Batch: 4100470								
Arsenic	**1.01**	0.545	1.09	mg/kg dry	10	10/17/14 16:59	EPA 6020A	J
Cadmium	**0.153**	0.109	0.218	"	"	"	"	J
Chromium	**2.52**	0.545	1.09	"	"	"	"	
Copper	**3.26**	0.545	1.09	"	"	"	"	
Lead	**2.13**	0.109	0.218	"	"	"	"	
Mercury	ND	0.0436	0.0873	"	"	"	"	
Selenium	ND	0.545	1.09	"	"	"	"	
Silver	ND	0.109	0.218	"	"	"	"	
Zinc	**21.8**	2.18	4.36	"	"	"	"	
Sand 30 Comp-Dup (A4J0221-02RE1)			**Matrix: Soil**					
Batch: 4100470								
Nickel	**4.71**	0.545	1.09	mg/kg dry	10	10/21/14 16:19	EPA 6020A	

Apex Laboratories



Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

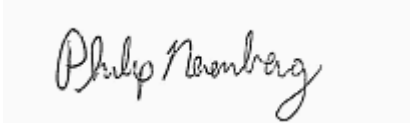
Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
Sand 30 Comp (A4J0221-01)			**Matrix: Soil**		**Batch: 4100312**			
% Solids	**94.7**	---	1.00	% by Weight	1	10/13/14 10:10	EPA 8000C	
Sand 30 Comp-Dup (A4J0221-02)			**Matrix: Soil**		**Batch: 4100312**			
% Solids	**94.7**	---	1.00	% by Weight	1	10/13/14 10:10	EPA 8000C	

Apex Laboratories



Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

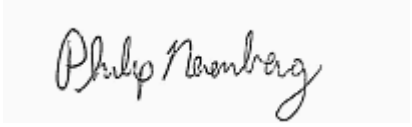
Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4100351 - EPA 3546 (Fuels)							**Soil**					
Blank (4100351-BLK1)					Prepared: 10/13/14 09:46 Analyzed: 10/13/14 12:43							
NWTPH-Dx												
Diesel	ND	---	25.0	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	---	50.0	"	"	---	---	---	---	---	---	
Surr: o-Terphenyl (Surr)			*Recovery: 111 %*	*Limits: 50-150 %*			*Dilution: 1x*					
LCS (4100351-BS1)					Prepared: 10/13/14 09:46 Analyzed: 10/13/14 13:17							
NWTPH-Dx												
Diesel	132	---	25.0	mg/kg wet	1	125	---	105	76-115%	---	---	
Surr: o-Terphenyl (Surr)			*Recovery: 118 %*	*Limits: 50-150 %*			*Dilution: 1x*					
Duplicate (4100351-DUP1)					Prepared: 10/13/14 09:46 Analyzed: 10/13/14 13:59							
QC Source Sample: Other (A4J0295-02)												
NWTPH-Dx												
Diesel	**33800**	---	912	mg/kg dry	40	---	35700	---	---	6	30%	
Oil	ND	---	1820	"	"	---	ND	---	---	---	30%	
Surr: o-Terphenyl (Surr)			*Recovery: %*	*Limits: 50-150 %*			*Dilution: 40x*					*S-01*
Duplicate (4100351-DUP2)					Prepared: 10/13/14 14:35 Analyzed: 10/14/14 03:13							
QC Source Sample: Other (A4J0158-01)												
NWTPH-Dx												
Diesel	**272**	---	25.0	mg/kg dry	1	---	217	---	---	23	30%	F-11, F-15
Oil	**56.5**	---	50.0	"	"	---	51.7	---	---	9	30%	F-16
Surr: o-Terphenyl (Surr)			*Recovery: 88 %*	*Limits: 50-150 %*			*Dilution: 1x*					

Apex Laboratories



Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

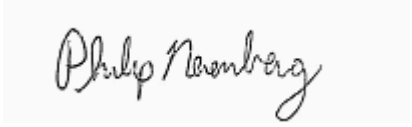
Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

QUALITY CONTROL (QC) SAMPLE RESULTS

Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4100379 - EPA 3546							**Soil**					
Blank (4100379-BLK1)					Prepared: 10/14/14 08:30 Analyzed: 10/15/14 18:28							
EPA 8082A												
Aroclor 1016	ND	1.43	2.86	ug/kg wet	1	---	---	---	---	---	---	
Aroclor 1221	ND	1.43	2.86	"	"	---	---	---	---	---	---	
Aroclor 1232	ND	1.43	2.86	"	"	---	---	---	---	---	---	
Aroclor 1242	ND	1.43	2.86	"	"	---	---	---	---	---	---	
Aroclor 1248	ND	1.43	2.86	"	"	---	---	---	---	---	---	
Aroclor 1254	ND	1.43	2.86	"	"	---	---	---	---	---	---	
Aroclor 1260	ND	1.43	2.86	"	"	---	---	---	---	---	---	
Aroclor 1262	ND	1.43	2.86	"	"	---	---	---	---	---	---	
Aroclor 1268	ND	1.43	2.86	"	"	---	---	---	---	---	---	
Surr: Decachlorobiphenyl (Surr)			*Recovery: 103 %*	*Limits: 72-111 %*			*Dilution: 1x*					
LCS (4100379-BS2)					Prepared: 10/14/14 08:30 Analyzed: 10/16/14 18:02							C-07
EPA 8082A												
Aroclor 1016	165	2.00	4.00	ug/kg wet	1	250	---	66	47-134%	---	---	
Aroclor 1260	223	2.00	4.00	"	"	"	---	89	53-140%	---	---	
Surr: Decachlorobiphenyl (Surr)			*Recovery: 102 %*	*Limits: 44-111 %*			*Dilution: 1x*					
Duplicate (4100379-DUP2)					Prepared: 10/14/14 08:30 Analyzed: 10/16/14 21:04							C-07
QC Source Sample: Sand 30 Comp (A4J0221-01RE1)												
EPA 8082A												
Aroclor 1016	ND	1.51	3.02	ug/kg dry	1	---	ND	---	---	---	30%	
Aroclor 1221	ND	1.51	3.02	"	"	---	ND	---	---	---	30%	
Aroclor 1232	ND	1.51	3.02	"	"	---	ND	---	---	---	30%	
Aroclor 1242	ND	1.51	3.02	"	"	---	ND	---	---	---	30%	
Aroclor 1248	ND	1.51	3.02	"	"	---	ND	---	---	---	30%	
Aroclor 1254	ND	1.51	3.02	"	"	---	ND	---	---	---	30%	
Aroclor 1260	ND	1.51	3.02	"	"	---	ND	---	---	---	30%	
Aroclor 1262	ND	1.51	3.02	"	"	---	ND	---	---	---	30%	
Aroclor 1268	ND	1.51	3.02	"	"	---	ND	---	---	---	30%	
Surr: Decachlorobiphenyl (Surr)			*Recovery: 91 %*	*Limits: 44-111 %*			*Dilution: 1x*					
Matrix Spike (4100379-MS2)					Prepared: 10/14/14 08:30 Analyzed: 10/16/14 22:53							C-07
QC Source Sample: Other (A4J0221-02RE1)												
EPA 8082A												

Apex Laboratories



Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

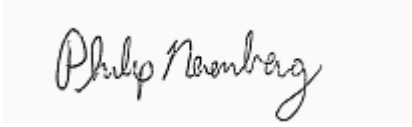
Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

QUALITY CONTROL (QC) SAMPLE RESULTS

Polychlorinated Biphenyls -- EPA 8082A

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4100379 - EPA 3546							**Soil**					
Matrix Spike (4100379-MS2)					Prepared: 10/14/14 08:30		Analyzed: 10/16/14 22:53					C-07
QC Source Sample: Other (A4J0221-02RE1)												
Aroclor 1016	164	1.74	3.49	ug/kg dry	1	218	ND	75	47-134%	---	---	
Aroclor 1260	200	1.74	3.49	"	"	"	ND	92	53-140%	---	---	
Surr: Decachlorobiphenyl (Surr)				*Recovery: 96 %*	*Limits: 44-111 %*		*Dilution: 1x*					

Apex Laboratories



Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

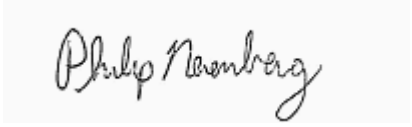
Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4100469 - EPA 3546/3640A (GPC)							**Soil**					
Blank (4100469-BLK1)					Prepared: 10/16/14 10:20 Analyzed: 10/20/14 16:14							C-05
EPA 8081B												
Aldrin	ND	0.323	0.645	ug/kg wet	1	---	---	---	---	---	---	
alpha-BHC	ND	0.323	0.645	"	"	---	---	---	---	---	---	
beta-BHC	ND	0.323	0.645	"	"	---	---	---	---	---	---	
delta-BHC	ND	0.323	0.645	"	"	---	---	---	---	---	---	
gamma-BHC (Lindane)	ND	0.323	0.645	"	"	---	---	---	---	---	---	
cis-Chlordane	ND	0.323	0.645	"	"	---	---	---	---	---	---	
trans-Chlordane	ND	0.323	0.645	"	"	---	---	---	---	---	---	
4,4'-DDD	ND	0.323	0.645	"	"	---	---	---	---	---	---	
4,4'-DDE	ND	0.323	0.645	"	"	---	---	---	---	---	---	
4,4'-DDT	ND	0.323	0.645	"	"	---	---	---	---	---	---	
Dieldrin	ND	0.323	0.645	"	"	---	---	---	---	---	---	
Endosulfan I	ND	0.323	0.645	"	"	---	---	---	---	---	---	
Endosulfan II	ND	0.323	0.645	"	"	---	---	---	---	---	---	
Endosulfan sulfate	ND	0.323	0.645	"	"	---	---	---	---	---	---	
Endrin	ND	0.323	0.645	"	"	---	---	---	---	---	---	
Endrin Aldehyde	ND	0.323	0.645	"	"	---	---	---	---	---	---	
Endrin ketone	ND	0.323	0.645	"	"	---	---	---	---	---	---	
Heptachlor	ND	0.323	0.645	"	"	---	---	---	---	---	---	
Heptachlor epoxide	ND	0.323	0.645	"	"	---	---	---	---	---	---	
Methoxychlor	ND	0.968	1.94	"	"	---	---	---	---	---	---	
Chlordane (Technical)	ND	9.68	19.4	"	"	---	---	---	---	---	---	
Toxaphene (Total)	ND	9.68	19.4	"	"	---	---	---	---	---	---	
Surr: 2,4,5,6-TCMX (Surr)			*Recovery: 80 %*		*Limits: 42-129 %*			*Dilution: 1x*				*Q-31*
Decachlorobiphenyl (Surr)			*100 %*		*65-151 %*			*"*				
LCS (4100469-BS1)					Prepared: 10/16/14 10:20 Analyzed: 10/20/14 16:32							C-05
EPA 8081B												
Aldrin	40.0	1.00	2.00	ug/kg wet	1	50.0	---	80	45-136%	---	---	
alpha-BHC	41.7	1.00	2.00	"	"	"	---	83	45-137%	---	---	
beta-BHC	44.6	1.00	2.00	"	"	"	---	89	50-136%	---	---	
delta-BHC	46.6	1.00	2.00	"	"	"	---	93	47-139%	---	---	
gamma-BHC (Lindane)	41.2	1.00	2.00	"	"	"	---	82	49-135%	---	---	
cis-Chlordane	43.1	1.00	2.00	"	"	"	---	86	54-133%	---	---	
trans-Chlordane	45.1	1.00	2.00	"	"	"	---	90	53-135%	---	---	

Apex Laboratories



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Philip Nerenberg, Lab Director

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4100469 - EPA 3546/3640A (GPC)							**Soil**					
LCS (4100469-BS1)					Prepared: 10/16/14 10:20		Analyzed: 10/20/14 16:32					C-05
4,4'-DDD	57.3	1.00	2.00	ug/kg wet	"	"	---	115	56-139%	---	---	
4,4'-DDE	52.4	1.00	2.00	"	"	"	---	105	56-134%	---	---	
4,4'-DDT	56.9	1.00	2.00	"	"	"	---	114	50-141%	---	---	
Dieldrin	46.0	1.00	2.00	"	"	"	---	92	56-136%	---	---	
Endosulfan I	45.7	1.00	2.00	"	"	"	---	91	52-132%	---	---	
Endosulfan II	55.8	1.00	2.00	"	"	"	---	112	53-134%	---	---	
Endosulfan sulfate	51.4	1.00	2.00	"	"	"	---	103	55-136%	---	---	
Endrin	56.9	1.00	2.00	"	"	"	---	114	56-140%	---	---	
Endrin Aldehyde	49.9	1.00	2.00	"	"	"	---	100	35-137%	---	---	
Endrin ketone	47.1	1.00	2.00	"	"	"	---	94	55-136%	---	---	
Heptachlor	40.2	1.00	2.00	"	"	"	---	80	47-136%	---	---	
Heptachlor epoxide	44.3	1.00	2.00	"	"	"	---	89	52-136%	---	---	
Methoxychlor	66.6	3.00	6.00	"	"	"	---	133	52-143%	---	---	
Surr: 2,4,5,6-TCMX (Surr)			*Recovery: 73 %*	*Limits: 42-129 %*			*Dilution: 1x*					*Q-31*
Decachlorobiphenyl (Surr)			*103 %*	*65-151 %*			*"*					
Duplicate (4100469-DUP1)					Prepared: 10/16/14 10:20		Analyzed: 10/20/14 18:37					C-05
QC Source Sample: Other (A4J0181-04RE1)												
EPA 8081B												
Aldrin	ND	0.435	0.870	ug/kg dry	1	---	ND	---	---	---	30%	
alpha-BHC	ND	0.435	0.870	"	"	---	ND	---	---	---	30%	
beta-BHC	ND	0.870	0.870	"	"	---	1.08	---	---	***	30%	
delta-BHC	ND	0.870	0.870	"	"	---	0.566	---	---	***	30%	
gamma-BHC (Lindane)	ND	0.435	0.870	"	"	---	ND	---	---	---	30%	
cis-Chlordane	ND	0.435	0.870	"	"	---	ND	---	---	---	30%	
trans-Chlordane	ND	0.957	0.957	"	"	---	0.765	---	---	***	30%	R-02
4,4'-DDD	ND	4.87	4.87	"	"	---	4.55	---	---	***	30%	R-02
4,4'-DDE	ND	1.57	1.57	"	"	---	1.11	---	---	***	30%	R-02
4,4'-DDT	ND	1.83	1.83	"	"	---	1.52	---	---	***	30%	R-02
Dieldrin	ND	0.870	0.870	"	"	---	0.674	---	---	***	30%	
Endosulfan I	ND	0.435	0.870	"	"	---	ND	---	---	---	30%	
Endosulfan II	ND	0.435	0.870	"	"	---	ND	---	---	---	30%	
Endosulfan sulfate	ND	1.30	1.30	"	"	---	0.648	---	---	***	30%	R-02
Endrin	ND	0.870	0.870	"	"	---	0.588	---	---	***	30%	
Endrin Aldehyde	ND	1.57	1.57	"	"	---	1.10	---	---	***	30%	R-02

Apex Laboratories

Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4100469 - EPA 3546/3640A (GPC)							**Soil**					
Duplicate (4100469-DUP1)					Prepared: 10/16/14 10:20 Analyzed: 10/20/14 18:37							C-05
QC Source Sample: Other (A4J0181-04RE1)												
Endrin ketone	ND	0.870	0.870	ug/kg dry	"	---	ND	---	---	---	30%	
Heptachlor	ND	0.435	0.870	"	"	---	ND	---	---	---	30%	
Heptachlor epoxide	ND	0.870	0.870	"	"	---	ND	---	---	---	30%	
Methoxychlor	ND	3.65	3.65	"	"	---	1.78	---	---	***	30%	R-02
Chlordane (Technical)	ND	13.0	26.1	"	"	---	ND	---	---	---	30%	
Toxaphene (Total)	ND	13.0	26.1	"	"	---	ND	---	---	---	30%	
Surr: 2,4,5,6-TCMX (Surr)			*Recovery: 65 %*		*Limits: 42-129 %*		*Dilution: 1x*					*Q-31*
Decachlorobiphenyl (Surr)			*66 %*		*65-151 %*		*"*					
Matrix Spike (4100469-MS1)					Prepared: 10/16/14 10:20 Analyzed: 10/20/14 23:38							C-05
QC Source Sample: Other (A4J0344-04RE1)												
EPA 8081B												
Aldrin	18.7	0.405	0.810	ug/kg dry	1	20.3	ND	92	45-136%	---	---	
alpha-BHC	19.7	0.405	0.810	"	"	"	ND	97	45-137%	---	---	
beta-BHC	16.8	0.405	0.810	"	"	"	0.989	78	50-136%	---	---	
delta-BHC	23.7	0.405	0.810	"	"	"	ND	117	47-139%	---	---	
gamma-BHC (Lindane)	19.9	0.405	0.810	"	"	"	ND	98	49-135%	---	---	
cis-Chlordane	13.7	0.405	0.810	"	"	"	0.940	63	54-133%	---	---	
trans-Chlordane	15.1	0.405	0.810	"	"	"	1.14	69	53-135%	---	---	
4,4'-DDD	22.9	0.405	0.810	"	"	"	0.631	110	56-139%	---	---	Q-41
4,4'-DDE	22.6	0.405	0.810	"	"	"	ND	112	56-134%	---	---	
4,4'-DDT	17.9	0.405	0.810	"	"	"	1.09	83	50-141%	---	---	
Dieldrin	15.8	0.405	0.810	"	"	"	0.878	74	56-136%	---	---	
Endosulfan I	19.3	0.405	0.810	"	"	"	ND	95	52-132%	---	---	
Endosulfan II	21.5	0.405	0.810	"	"	"	ND	106	53-134%	---	---	
Endosulfan sulfate	14.6	0.405	0.810	"	"	"	ND	72	55-136%	---	---	
Endrin	22.8	0.405	0.810	"	"	"	0.606	110	56-140%	---	---	Q-41
Endrin Aldehyde	20.8	0.405	0.810	"	"	"	0.486	100	35-137%	---	---	
Endrin ketone	15.2	0.405	0.810	"	"	"	ND	75	55-136%	---	---	
Heptachlor	20.3	0.405	0.810	"	"	"	ND	100	47-136%	---	---	
Heptachlor epoxide	19.3	0.405	0.810	"	"	"	ND	95	52-136%	---	---	
Methoxychlor	21.1	1.22	2.43	"	"	"	ND	104	52-143%	---	---	
Surr: 2,4,5,6-TCMX (Surr)			*Recovery: 74 %*		*Limits: 42-129 %*		*Dilution: 1x*					
Decachlorobiphenyl (Surr)			*69 %*		*65-151 %*		*"*					

Apex Laboratories

Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

QUALITY CONTROL (QC) SAMPLE RESULTS

Organochlorine Pesticides by EPA 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4100469 - EPA 3546/3640A (GPC)							**Soil**					

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

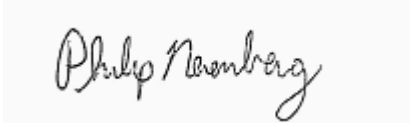
Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4100378 - EPA 3546							**Soil**					
Blank (4100378-BLK1)					Prepared: 10/14/14 07:54 Analyzed: 10/14/14 11:41							
EPA 8270D												
Dibenzofuran	ND	1.25	2.50	ug/kg wet	1	---	---	---	---	---	---	
3+4-Methylphenol(s)	ND	3.12	6.25	"	"	---	---	---	---	---	---	
Pentachlorophenol (PCP)	ND	12.5	25.0	"	"	---	---	---	---	---	---	
Phenol	ND	2.50	5.00	"	"	---	---	---	---	---	---	
Bis(2-ethylhexyl)phthalate	ND	37.5	37.5	"	"	---	---	---	---	---	---	
Di-n-butylphthalate	ND	12.5	25.0	"	"	---	---	---	---	---	---	
Di-n-octyl phthalate	ND	12.5	25.0	"	"	---	---	---	---	---	---	
Benzoic acid	ND	157	312	"	"	---	---	---	---	---	---	
Surr: Nitrobenzene-d5 (Surr)			*Recovery: 103 %*		*Limits: 37-122 %*			*Dilution: 1x*				
2-Fluorobiphenyl (Surr)			*94 %*		*44-115 %*			*"*				
Phenol-d6 (Surr)			*100 %*		*33-122 %*			*"*				
p-Terphenyl-d14 (Surr)			*113 %*		*54-127 %*			*"*				
2-Fluorophenol (Surr)			*90 %*		*35-115 %*			*"*				
2,4,6-Tribromophenol (Surr)			*109 %*		*39-132 %*			*"*				*Q-41*
LCS (4100378-BS1)					Prepared: 10/14/14 07:54 Analyzed: 10/14/14 12:19							
EPA 8270D												
Dibenzofuran	538	1.33	2.67	ug/kg wet	1	533	---	101	44-120%	---	---	
3+4-Methylphenol(s)	587	3.33	6.67	"	"	"	---	110	34-120%	---	---	
Pentachlorophenol (PCP)	576	13.3	26.7	"	"	"	---	108	25-133%	---	---	
Phenol	598	2.67	5.33	"	"	"	---	112	34-120%	---	---	
Bis(2-ethylhexyl)phthalate	559	40.0	40.0	"	"	"	---	105	51-133%	---	---	
Di-n-butylphthalate	612	13.3	26.7	"	"	"	---	115	51-128%	---	---	
Di-n-octyl phthalate	572	13.3	26.7	"	"	"	---	107	44-140%	---	---	
Benzoic acid	1110	167	333	"	"	1070	---	104	5-140%	---	---	
Surr: Nitrobenzene-d5 (Surr)			*Recovery: 104 %*		*Limits: 37-122 %*			*Dilution: 1x*				
2-Fluorobiphenyl (Surr)			*90 %*		*44-115 %*			*"*				
Phenol-d6 (Surr)			*104 %*		*33-122 %*			*"*				
p-Terphenyl-d14 (Surr)			*100 %*		*54-127 %*			*"*				
2-Fluorophenol (Surr)			*91 %*		*35-115 %*			*"*				
2,4,6-Tribromophenol (Surr)			*112 %*		*39-132 %*			*"*				*Q-41*
Duplicate (4100378-DUP2)					Prepared: 10/14/14 07:54 Analyzed: 10/15/14 17:40							
QC Source Sample: Sand 30 Comp (A4J0221-01RE1)												
EPA 8270D												

Apex Laboratories



Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270D

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4100378 - EPA 3546							**Soil**					
Duplicate (4100378-DUP2)					Prepared: 10/14/14 07:54 Analyzed: 10/15/14 17:40							
QC Source Sample: Sand 30 Comp (A4J0221-01RE1)												
Dibenzofuran	ND	1.32	2.64	ug/kg dry	1	---	ND	---	---	---	30%	
3+4-Methylphenol(s)	ND	3.30	6.61	"	"	---	ND	---	---	---	30%	
Pentachlorophenol (PCP)	ND	13.2	26.4	"	"	---	ND	---	---	---	30%	
Phenol	ND	2.64	5.28	"	"	---	ND	---	---	---	30%	
Bis(2-ethylhexyl)phthalate	ND	39.6	39.6	"	"	---	ND	---	---	---	30%	
Di-n-butylphthalate	**15.1**	13.2	26.4	"	"	---	ND	---	---		30%	J
Di-n-octyl phthalate	ND	13.2	26.4	"	"	---	ND	---	---	---	30%	
Benzoic acid	ND	165	330	"	"	---	ND	---	---	---	30%	
Surr: Nitrobenzene-d5 (Surr)			*Recovery: 89 %*	*Limits: 37-122 %*		*Dilution: 1x*						
2-Fluorobiphenyl (Surr)			*76 %*	*44-115 %*		*"*						
Phenol-d6 (Surr)			*72 %*	*33-122 %*		*"*						
p-Terphenyl-d14 (Surr)			*96 %*	*54-127 %*		*"*						
2-Fluorophenol (Surr)			*64 %*	*35-115 %*		*"*						
2,4,6-Tribromophenol (Surr)			*103 %*	*39-132 %*		*"*						
Matrix Spike (4100378-MS1)					Prepared: 10/14/14 07:54 Analyzed: 10/15/14 18:52							
QC Source Sample: Other (A4J0221-02RE2)												
EPA 8270D												
Dibenzofuran	427	6.62	13.3	ug/kg dry	5	531	ND	80	44-120%	---	---	
3+4-Methylphenol(s)	474	16.6	33.2	"	"	"	ND	89	34-120%	---	---	
Pentachlorophenol (PCP)	495	66.2	133	"	"	"	ND	93	25-133%	---	---	
Phenol	446	13.3	26.5	"	"	"	ND	84	34-120%	---	---	
Bis(2-ethylhexyl)phthalate	542	199	199	"	"	"	ND	102	51-133%	---	---	
Di-n-butylphthalate	524	66.2	133	"	"	"	14.2	96	51-128%	---	---	
Di-n-octyl phthalate	495	66.2	133	"	"	"	ND	93	44-140%	---	---	
Benzoic acid	1010	831	831	"	"	1060	ND	95	5-140%	---	---	
Surr: Nitrobenzene-d5 (Surr)			*Recovery: 93 %*	*Limits: 37-122 %*		*Dilution: 5x*						
2-Fluorobiphenyl (Surr)			*81 %*	*44-115 %*		*"*						
Phenol-d6 (Surr)			*80 %*	*33-122 %*		*"*						
p-Terphenyl-d14 (Surr)			*89 %*	*54-127 %*		*"*						
2-Fluorophenol (Surr)			*62 %*	*35-115 %*		*"*						
2,4,6-Tribromophenol (Surr)			*100 %*	*39-132 %*		*"*						

Apex Laboratories

Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4100425 - EPA 3546							**Soil**					
Blank (4100425-BLK1)					Prepared: 10/15/14 10:28 Analyzed: 10/15/14 15:23							
EPA 8270D (SIM)												
Acenaphthene	ND	3.57	7.14	ug/kg wet	1	---	---	---	---	---	---	
Acenaphthylene	ND	3.57	7.14	"	"	---	---	---	---	---	---	
Anthracene	ND	3.57	7.14	"	"	---	---	---	---	---	---	
Benz(a)anthracene	ND	3.57	7.14	"	"	---	---	---	---	---	---	
Benzo(a)pyrene	ND	3.57	7.14	"	"	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	3.57	7.14	"	"	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	3.57	7.14	"	"	---	---	---	---	---	---	
Benzo(b+k)fluoranthene(s)	ND	7.14	14.3	"	"	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	3.57	7.14	"	"	---	---	---	---	---	---	
Carbazole	ND	3.57	7.14	"	"	---	---	---	---	---	---	
Chrysene	ND	3.57	7.14	"	"	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	3.57	7.14	"	"	---	---	---	---	---	---	
Dibenzofuran	ND	3.57	7.14	"	"	---	---	---	---	---	---	
Fluoranthene	**5.25**	3.57	7.14	"	"	---	---	---	---	---	---	B-02, J
Fluorene	ND	3.57	7.14	"	"	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	3.57	7.14	"	"	---	---	---	---	---	---	
1-Methylnaphthalene	ND	3.57	7.14	"	"	---	---	---	---	---	---	
2-Methylnaphthalene	ND	3.57	7.14	"	"	---	---	---	---	---	---	
Naphthalene	ND	3.57	7.14	"	"	---	---	---	---	---	---	
Phenanthrene	**3.93**	3.57	7.14	"	"	---	---	---	---	---	---	B-02, J
Pyrene	**3.77**	3.57	7.14	"	"	---	---	---	---	---	---	B-02, J
Surr: 2-Fluorobiphenyl (Surr)			*Recovery: 86 %*	*Limits: 44-115 %*			*Dilution: 1x*					
p-Terphenyl-d14 (Surr)			*97 %*	*54-127 %*			*"*					
LCS (4100425-BS1)					Prepared: 10/15/14 10:28 Analyzed: 10/15/14 15:49							
EPA 8270D (SIM)												
Acenaphthene	738	5.00	10.0	ug/kg wet	1	800	---	92	40-122%	---	---	
Acenaphthylene	732	5.00	10.0	"	"	"	---	91	32-132%	---	---	
Anthracene	789	5.00	10.0	"	"	"	---	99	47-123%	---	---	
Benz(a)anthracene	713	5.00	10.0	"	"	"	---	89	49-126%	---	---	
Benzo(a)pyrene	792	5.00	10.0	"	"	"	---	99	45-129%	---	---	
Benzo(b)fluoranthene	718	5.00	10.0	"	"	"	---	90	45-132%	---	---	
Benzo(k)fluoranthene	827	5.00	10.0	"	"	"	---	103	47-132%	---	---	
Benzo(b+k)fluoranthene(s)	1530	10.0	20.0	"	"	1600	---	96	45-132%	---	---	

Apex Laboratories

Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4100425 - EPA 3546							**Soil**					
LCS (4100425-BS1)					Prepared: 10/15/14 10:28 Analyzed: 10/15/14 15:49							
Benzo(g,h,i)perylene	630	5.00	10.0	ug/kg wet	"	800	---	79	43-134%	---	---	
Carbazole	707	5.00	10.0	"	"	"	---	88	50-122%	---	---	
Chrysene	746	5.00	10.0	"	"	"	---	93	50-124%	---	---	
Dibenz(a,h)anthracene	795	5.00	10.0	"	"	"	---	99	45-134%	---	---	
Dibenzofuran	769	5.00	10.0	"	"	"	---	96	44-120%	---	---	
Fluoranthene	736	5.00	10.0	"	"	"	---	92	50-127%	---	---	B-02
Fluorene	795	5.00	10.0	"	"	"	---	99	43-125%	---	---	
Indeno(1,2,3-cd)pyrene	822	5.00	10.0	"	"	"	---	103	45-133%	---	---	
1-Methylnaphthalene	728	5.00	10.0	"	"	"	---	91	40-120%	---	---	
2-Methylnaphthalene	764	5.00	10.0	"	"	"	---	95	38-122%	---	---	
Naphthalene	755	5.00	10.0	"	"	"	---	94	35-123%	---	---	
Phenanthrene	760	5.00	10.0	"	"	"	---	95	50-121%	---	---	B-02
Pyrene	739	5.00	10.0	"	"	"	---	92	47-127%	---	---	B-02
Surr: 2-Fluorobiphenyl (Surr)			*Recovery: 87 %*	*Limits: 44-115 %*			*Dilution: 1x*					
p-Terphenyl-d14 (Surr)			*91 %*	*54-127 %*			*"*					
Duplicate (4100425-DUP1)					Prepared: 10/15/14 10:28 Analyzed: 10/15/14 17:07							
QC Source Sample: Sand 30 Comp (A4J0221-01)												
EPA 8270D (SIM)												
Acenaphthene	ND	4.83	9.65	ug/kg dry	1	---	4.04	---	---	***	30%	
Acenaphthylene	ND	4.83	9.65	"	"	---	ND	---	---	---	30%	
Anthracene	ND	4.83	9.65	"	"	---	5.83	---	---	***	30%	
Benz(a)anthracene	ND	4.83	9.65	"	"	---	ND	---	---	---	30%	
Benzo(a)pyrene	ND	4.83	9.65	"	"	---	ND	---	---	---	30%	
Benzo(b)fluoranthene	ND	4.83	9.65	"	"	---	ND	---	---	---	30%	
Benzo(k)fluoranthene	ND	4.83	9.65	"	"	---	ND	---	---	---	30%	
Benzo(b+k)fluoranthene(s)	ND	9.65	19.3	"	"	---	ND	---	---	---	30%	
Benzo(g,h,i)perylene	ND	4.83	9.65	"	"	---	ND	---	---	---	30%	
Carbazole	ND	4.83	9.65	"	"	---	ND	---	---	---	30%	
Chrysene	ND	4.83	9.65	"	"	---	ND	---	---	---	30%	
Dibenz(a,h)anthracene	ND	4.83	9.65	"	"	---	ND	---	---	---	30%	
Dibenzofuran	ND	4.83	9.65	"	"	---	ND	---	---	---	30%	
Fluoranthene	ND	4.83	9.65	"	"	---	5.85	---	---	***	30%	
Fluorene	ND	4.83	9.65	"	"	---	ND	---	---	---	30%	
Indeno(1,2,3-cd)pyrene	ND	4.83	9.65	"	"	---	ND	---	---	---	30%	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Philip Nerenberg, Lab Director

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4100425 - EPA 3546							**Soil**					
Duplicate (4100425-DUP1)					Prepared: 10/15/14 10:28 Analyzed: 10/15/14 17:07							
QC Source Sample: Sand 30 Comp (A4J0221-01)												
1-Methylnaphthalene	ND	4.83	9.65	ug/kg dry	"	---	ND	---	---	---	30%	
2-Methylnaphthalene	ND	4.83	9.65	"	"	---	ND	---	---	---	30%	
Naphthalene	ND	4.83	9.65	"	"	---	ND	---	---	---	30%	
Phenanthrene	ND	4.83	9.65	"	"	---	13.4	---	---	***	30%	
Pyrene	ND	4.83	9.65	"	"	---	4.85	---	---	***	30%	
Surr: 2-Fluorobiphenyl (Surr)			*Recovery: 87 %*	*Limits: 44-115 %*		*Dilution: 1x*						
p-Terphenyl-d14 (Surr)			*102 %*	*54-127 %*		*"*						
Matrix Spike (4100425-MS1)					Prepared: 10/15/14 10:28 Analyzed: 10/15/14 17:59							
QC Source Sample: Other (A4J0221-02)												
EPA 8270D (SIM)												
Acenaphthene	763	5.13	10.3	ug/kg dry	1	820	ND	93	40-122%	---	---	
Acenaphthylene	757	5.13	10.3	"	"	"	ND	92	32-132%	---	---	
Anthracene	788	5.13	10.3	"	"	"	ND	96	47-123%	---	---	
Benz(a)anthracene	734	5.13	10.3	"	"	"	ND	90	49-126%	---	---	
Benzo(a)pyrene	817	5.13	10.3	"	"	"	ND	100	45-129%	---	---	
Benzo(b)fluoranthene	779	5.13	10.3	"	"	"	ND	95	45-132%	---	---	
Benzo(k)fluoranthene	857	5.13	10.3	"	"	"	ND	105	47-132%	---	---	
Benzo(b+k)fluoranthene(s)	1610	10.3	20.5	"	"	1640	ND	98	45-132%	---	---	
Benzo(g,h,i)perylene	661	5.13	10.3	"	"	820	ND	81	43-134%	---	---	
Carbazole	687	5.13	10.3	"	"	"	ND	84	50-122%	---	---	
Chrysene	793	5.13	10.3	"	"	"	ND	97	50-124%	---	---	
Dibenz(a,h)anthracene	826	5.13	10.3	"	"	"	ND	101	45-134%	---	---	
Dibenzofuran	813	5.13	10.3	"	"	"	ND	99	44-120%	---	---	
Fluoranthene	728	5.13	10.3	"	"	"	ND	89	50-127%	---	---	B-02
Fluorene	839	5.13	10.3	"	"	"	ND	102	43-125%	---	---	
Indeno(1,2,3-cd)pyrene	863	5.13	10.3	"	"	"	ND	105	45-133%	---	---	
1-Methylnaphthalene	756	5.13	10.3	"	"	"	ND	92	40-120%	---	---	
2-Methylnaphthalene	786	5.13	10.3	"	"	"	ND	96	38-122%	---	---	
Naphthalene	783	5.13	10.3	"	"	"	ND	96	35-123%	---	---	
Phenanthrene	759	5.13	10.3	"	"	"	ND	93	50-121%	---	---	B-02
Pyrene	726	5.13	10.3	"	"	"	ND	88	47-127%	---	---	B-02
Surr: 2-Fluorobiphenyl (Surr)			*Recovery: 90 %*	*Limits: 44-115 %*		*Dilution: 1x*						
p-Terphenyl-d14 (Surr)			*95 %*	*54-127 %*		*"*						

Apex Laboratories

Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4100425 - EPA 3546							**Soil**					

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Philip Nerenberg, Lab Director

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4100499 - EPA 3546							**Soil**					
Blank (4100499-BLK1)					Prepared: 10/17/14 07:32 Analyzed: 10/17/14 11:41							
EPA 8270D (SIM)												
Acenaphthene	ND	3.85	7.69	ug/kg wet	1	---	---	---	---	---	---	
Acenaphthylene	ND	3.85	7.69	"	"	---	---	---	---	---	---	
Anthracene	ND	3.85	7.69	"	"	---	---	---	---	---	---	
Benz(a)anthracene	ND	3.85	7.69	"	"	---	---	---	---	---	---	
Benzo(a)pyrene	ND	3.85	7.69	"	"	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	3.85	7.69	"	"	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	3.85	7.69	"	"	---	---	---	---	---	---	
Benzo(b+k)fluoranthene(s)	ND	7.69	15.4	"	"	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	3.85	7.69	"	"	---	---	---	---	---	---	
Carbazole	ND	3.85	7.69	"	"	---	---	---	---	---	---	
Chrysene	ND	3.85	7.69	"	"	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	3.85	7.69	"	"	---	---	---	---	---	---	
Dibenzofuran	ND	3.85	7.69	"	"	---	---	---	---	---	---	
Fluoranthene	ND	3.85	7.69	"	"	---	---	---	---	---	---	
Fluorene	ND	3.85	7.69	"	"	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	3.85	7.69	"	"	---	---	---	---	---	---	
1-Methylnaphthalene	ND	3.85	7.69	"	"	---	---	---	---	---	---	
2-Methylnaphthalene	**5.32**	3.85	7.69	"	"	---	---	---	---	---	---	J, B-02
Naphthalene	ND	3.85	7.69	"	"	---	---	---	---	---	---	
Phenanthrene	ND	3.85	7.69	"	"	---	---	---	---	---	---	
Pyrene	ND	3.85	7.69	"	"	---	---	---	---	---	---	
Surr: 2-Fluorobiphenyl (Surr)			*Recovery: 87 %*	*Limits: 44-115 %*				*Dilution: 1x*				
p-Terphenyl-d14 (Surr)			*98 %*	*54-127 %*				*"*				
LCS (4100499-BS1)					Prepared: 10/17/14 07:32 Analyzed: 10/17/14 12:07							
EPA 8270D (SIM)												
Acenaphthene	768	5.00	10.0	ug/kg wet	1	800	---	96	40-122%	---	---	
Acenaphthylene	757	5.00	10.0	"	"	"	---	95	32-132%	---	---	
Anthracene	786	5.00	10.0	"	"	"	---	98	47-123%	---	---	
Benz(a)anthracene	742	5.00	10.0	"	"	"	---	93	49-126%	---	---	
Benzo(a)pyrene	798	5.00	10.0	"	"	"	---	100	45-129%	---	---	
Benzo(b)fluoranthene	733	5.00	10.0	"	"	"	---	92	45-132%	---	---	
Benzo(k)fluoranthene	781	5.00	10.0	"	"	"	---	98	47-132%	---	---	
Benzo(b+k)fluoranthene(s)	1490	10.0	20.0	"	"	1600	---	93	45-132%	---	---	

Apex Laboratories

Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4100499 - EPA 3546							**Soil**					
LCS (4100499-BS1)					Prepared: 10/17/14 07:32 Analyzed: 10/17/14 12:07							
Benzo(g,h,i)perylene	721	5.00	10.0	ug/kg wet	"	800	---	90	43-134%	---	---	
Carbazole	812	5.00	10.0	"	"	"	---	102	50-122%	---	---	
Chrysene	738	5.00	10.0	"	"	"	---	92	50-124%	---	---	
Dibenz(a,h)anthracene	769	5.00	10.0	"	"	"	---	96	45-134%	---	---	
Dibenzofuran	782	5.00	10.0	"	"	"	---	98	44-120%	---	---	
Fluoranthene	745	5.00	10.0	"	"	"	---	93	50-127%	---	---	
Fluorene	801	5.00	10.0	"	"	"	---	100	43-125%	---	---	
Indeno(1,2,3-cd)pyrene	702	5.00	10.0	"	"	"	---	88	45-133%	---	---	
1-Methylnaphthalene	722	5.00	10.0	"	"	"	---	90	40-120%	---	---	
2-Methylnaphthalene	758	5.00	10.0	"	"	"	---	95	38-122%	---	---	B-02
Naphthalene	733	5.00	10.0	"	"	"	---	92	35-123%	---	---	
Phenanthrene	770	5.00	10.0	"	"	"	---	96	50-121%	---	---	
Pyrene	745	5.00	10.0	"	"	"	---	93	47-127%	---	---	
Surr: 2-Fluorobiphenyl (Surr)			*Recovery: 90 %*	*Limits: 44-115 %*			*Dilution: 1x*					
p-Terphenyl-d14 (Surr)			*91 %*	*54-127 %*			*"*					
Duplicate (4100499-DUP1)					Prepared: 10/17/14 07:32 Analyzed: 10/17/14 13:52							
QC Source Sample: Other (A4J0349-03)												
EPA 8270D (SIM)												
Acenaphthene	ND	100	200	ug/kg dry	20	---	ND	---	---	---	30%	
Acenaphthylene	ND	100	200	"	"	---	ND	---	---	---	30%	
Anthracene	ND	100	200	"	"	---	ND	---	---	---	30%	
Benz(a)anthracene	**129**	100	200	"	"	---	140	---	---	8	30%	J
Benzo(a)pyrene	**161**	100	200	"	"	---	177	---	---	9	30%	J
Benzo(b+k)fluoranthene(s)	**293**	200	401	"	"	---	318	---	---	8	30%	J, Q-26
Benzo(g,h,i)perylene	**219**	100	200	"	"	---	228	---	---	4	30%	
Carbazole	ND	100	200	"	"	---	ND	---	---	---	30%	
Chrysene	**204**	100	200	"	"	---	216	---	---	6	30%	
Dibenz(a,h)anthracene	ND	100	200	"	"	---	ND	---	---	---	30%	
Dibenzofuran	ND	100	200	"	"	---	ND	---	---	---	30%	
Fluoranthene	**264**	100	200	"	"	---	286	---	---	8	30%	
Fluorene	ND	100	200	"	"	---	ND	---	---	---	30%	
Indeno(1,2,3-cd)pyrene	**151**	100	200	"	"	---	181	---	---	18	30%	J
1-Methylnaphthalene	ND	100	200	"	"	---	ND	---	---	---	30%	
2-Methylnaphthalene	ND	100	200	"	"	---	ND	---	---	---	30%	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Philip Nerenberg, Lab Director

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4100499 - EPA 3546							**Soil**					
Duplicate (4100499-DUP1)					Prepared: 10/17/14 07:32 Analyzed: 10/17/14 13:52							
QC Source Sample: Other (A4J0349-03)												
Naphthalene	ND	100	200	ug/kg dry	"	---	ND	---	---	---	30%	
Phenanthrene	**124**	100	200	"	"	---	133	---	---	7	30%	J
Pyrene	**321**	100	200	"	"	---	356	---	---	10	30%	
Surr: 2-Fluorobiphenyl (Surr)			*Recovery: 83 %*	*Limits: 44-115 %*			*Dilution: 20x*					
p-Terphenyl-d14 (Surr)			*90 %*	*54-127 %*			*"*					
Matrix Spike (4100499-MS2)					Prepared: 10/17/14 07:32 Analyzed: 10/17/14 21:41							T-02
QC Source Sample: Other (A4J0415-02RE1)												
EPA 8270D (SIM)												
Acenaphthene	984	61.8	124	ug/kg dry	5	988	ND	100	40-122%	---	---	
Acenaphthylene	961	61.8	124	"	"	"	ND	97	32-132%	---	---	
Anthracene	1060	61.8	124	"	"	"	ND	107	47-123%	---	---	
Benz(a)anthracene	1120	61.8	124	"	"	"	162	97	49-126%	---	---	
Benzo(a)pyrene	1200	61.8	124	"	"	"	190	103	45-129%	---	---	
Benzo(b)fluoranthene	1220	61.8	124	"	"	"	278	95	45-132%	---	---	
Benzo(k)fluoranthene	1170	61.8	124	"	"	"	114	107	47-132%	---	---	
Benzo(b+k)fluoranthene(s)	2420	124	247	"	"	1980	392	103	45-132%	---	---	
Benzo(g,h,i)perylene	992	61.8	124	"	"	988	216	79	43-134%	---	---	
Carbazole	1010	61.8	124	"	"	"	ND	103	50-122%	---	---	
Chrysene	1280	61.8	124	"	"	"	341	95	50-124%	---	---	
Dibenz(a,h)anthracene	984	61.8	124	"	"	"	ND	100	45-134%	---	---	
Dibenzofuran	1020	61.8	124	"	"	"	ND	103	44-120%	---	---	
Fluoranthene	1320	61.8	124	"	"	"	393	94	50-127%	---	---	
Fluorene	1080	61.8	124	"	"	"	ND	109	43-125%	---	---	
Indeno(1,2,3-cd)pyrene	961	61.8	124	"	"	"	151	82	45-133%	---	---	
1-Methylnaphthalene	983	61.8	124	"	"	"	ND	99	40-120%	---	---	
2-Methylnaphthalene	1080	61.8	124	"	"	"	ND	109	38-122%	---	---	B-02
Naphthalene	1020	61.8	124	"	"	"	ND	103	35-123%	---	---	
Phenanthrene	1320	61.8	124	"	"	"	329	100	50-121%	---	---	
Pyrene	1370	61.8	124	"	"	"	436	95	47-127%	---	---	
Surr: 2-Fluorobiphenyl (Surr)			*Recovery: 92 %*	*Limits: 44-115 %*			*Dilution: 5x*					
p-Terphenyl-d14 (Surr)			*105 %*	*54-127 %*			*"*					

Apex Laboratories

Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4100470 - EPA 3051A							**Soil**					
Blank (4100470-BLK1)					Prepared: 10/16/14 10:49 Analyzed: 10/17/14 15:13							
EPA 6020A												
Arsenic	ND	0.500	1.00	mg/kg wet	10	---	---	---	---	---	---	
Cadmium	ND	0.100	0.200	"	"	---	---	---	---	---	---	
Chromium	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Copper	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Lead	ND	0.100	0.200	"	"	---	---	---	---	---	---	
Mercury	ND	0.0400	0.0800	"	"	---	---	---	---	---	---	
Nickel	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Selenium	ND	0.500	1.00	"	"	---	---	---	---	---	---	
Silver	ND	0.100	0.200	"	"	---	---	---	---	---	---	
Zinc	ND	2.00	4.00	"	"	---	---	---	---	---	---	
LCS (4100470-BS1)					Prepared: 10/16/14 10:49 Analyzed: 10/17/14 15:16							
EPA 6020A												
Arsenic	49.8	0.500	1.00	mg/kg wet	10	50.0	---	100	80-120%	---	---	
Cadmium	52.7	0.100	0.200	"	"	"	---	105	"	---	---	
Chromium	50.9	0.500	1.00	"	"	"	---	102	"	---	---	
Copper	50.8	0.500	1.00	"	"	"	---	102	"	---	---	
Lead	53.9	0.100	0.200	"	"	"	---	108	"	---	---	
Mercury	1.03	0.0400	0.0800	"	"	1.00	---	103	"	---	---	
Nickel	51.0	0.500	1.00	"	"	50.0	---	102	"	---	---	
Selenium	24.0	0.500	1.00	"	"	25.0	---	96	"	---	---	
Silver	25.4	0.100	0.200	"	"	"	---	102	"	---	---	
Zinc	49.7	2.00	4.00	"	"	50.0	---	99	"	---	---	
Duplicate (4100470-DUP1)					Prepared: 10/16/14 10:49 Analyzed: 10/17/14 15:27							
QC Source Sample: Other (A4J0096-04)												
EPA 6020A												
Arsenic	**1.03**	0.512	1.02	mg/kg dry	10	---	ND	---	---		40%	
Cadmium	ND	0.102	0.205	"	"	---	ND	---	---	---	40%	
Chromium	**8.42**	0.512	1.02	"	"	---	4.02	---	---	71	40%	Q-04
Copper	**59.2**	0.512	1.02	"	"	---	49.1	---	---	19	40%	
Lead	**0.532**	0.102	0.205	"	"	---	0.378	---	---	34	40%	
Mercury	ND	0.0409	0.0819	"	"	---	ND	---	---	---	40%	
Nickel	**23.8**	0.512	1.02	"	"	---	20.1	---	---	17	40%	
Selenium	ND	0.512	1.02	"	"	---	ND	---	---	---	40%	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Philip Nerenberg, Lab Director

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

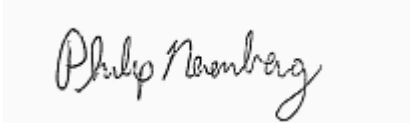
Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4100470 - EPA 3051A							**Soil**					
Duplicate (4100470-DUP1)					Prepared: 10/16/14 10:49		Analyzed: 10/17/14 15:27					
QC Source Sample: Other (A4J0096-04)												
Silver	ND	0.102	0.205	mg/kg dry	"	---	ND	---	---	---	40%	
Zinc	**16.0**	2.05	4.09	"	"	---	9.64	---	---	50	40%	Q-04
Matrix Spike (4100470-MS1)					Prepared: 10/16/14 10:49		Analyzed: 10/17/14 15:30					
QC Source Sample: Other (A4J0096-04)												
EPA 6020A												
Arsenic	52.0	0.518	1.04	mg/kg dry	10	51.8	ND	100	75-125%	---	---	
Cadmium	53.2	0.104	0.207	"	"	"	ND	103	"	---	---	
Chromium	58.7	0.518	1.04	"	"	"	4.02	105	"	---	---	
Copper	118	0.518	1.04	"	"	"	49.1	134	"	---	---	Q-04
Lead	53.6	0.104	0.207	"	"	"	0.378	103	"	---	---	
Mercury	1.06	0.0414	0.0828	"	"	1.04	ND	103	"	---	---	
Nickel	71.1	0.518	1.04	"	"	51.8	20.1	98	"	---	---	
Selenium	25.0	0.518	1.04	"	"	25.9	ND	97	"	---	---	
Silver	25.5	0.104	0.207	"	"	"	ND	99	"	---	---	
Zinc	61.1	2.07	4.14	"	"	51.8	9.64	99	"	---	---	
Matrix Spike (4100470-MS2)					Prepared: 10/16/14 10:49		Analyzed: 10/17/14 16:38					
QC Source Sample: Other (A4J0344-04)												
EPA 6020A												
Arsenic	82.0	0.668	1.34	mg/kg dry	10	66.8	13.2	103	75-125%	---	---	
Cadmium	74.9	0.134	0.267	"	"	"	0.605	111	"	---	---	
Chromium	99.0	0.668	1.34	"	"	"	23.8	113	"	---	---	
Copper	518	0.668	1.34	"	"	"	249	403	"	---	---	Q-03
Lead	143	0.134	0.267	"	"	"	68.2	111	"	---	---	
Mercury	1.48	0.0534	0.107	"	"	1.34	ND	111	"	---	---	Q-41
Nickel	108	0.668	1.34	"	"	66.8	36.4	107	"	---	---	
Selenium	33.5	0.668	1.34	"	"	33.4	ND	101	"	---	---	
Silver	35.0	0.134	0.267	"	"	"	0.164	104	"	---	---	
Zinc	258	2.67	5.34	"	"	66.8	347	-133	"	---	---	Q-03

Apex Laboratories



Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

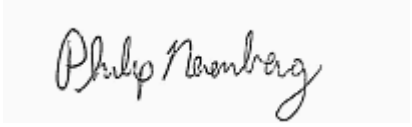
Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4100312 - Total Solids (Dry Weight)							**Soil**					
Duplicate (4100312-DUP1)					Prepared: 10/10/14 11:27		Analyzed: 10/13/14 10:10					
QC Source Sample: Other (A4J0239-03)												
EPA 8000C												
% Solids	**91.5**	---	1.00	% by Weight	1	---	91.8	---	---	0.3	20%	
Duplicate (4100312-DUP2)					Prepared: 10/10/14 11:27		Analyzed: 10/13/14 10:10					
QC Source Sample: Other (A4J0251-10)												
EPA 8000C												
% Solids	**70.5**	---	1.00	% by Weight	1	---	71.2	---	---	1	20%	
Duplicate (4100312-DUP3)					Prepared: 10/10/14 11:27		Analyzed: 10/13/14 10:10					
QC Source Sample: Other (A4J0251-20)												
EPA 8000C												
% Solids	**81.8**	---	1.00	% by Weight	1	---	81.8	---	---	0	20%	
Duplicate (4100312-DUP4)					Prepared: 10/10/14 11:27		Analyzed: 10/13/14 10:10					
QC Source Sample: Other (A4J0259-05)												
EPA 8000C												
% Solids	**87.3**	---	1.00	% by Weight	1	---	87.9	---	---	0.7	20%	
Duplicate (4100312-DUP5)					Prepared: 10/10/14 16:00		Analyzed: 10/13/14 10:10					
QC Source Sample: Other (A4J0269-08)												
EPA 8000C												
% Solids	**89.7**	---	1.00	% by Weight	1	---	89.0	---	---	0.8	20%	
Duplicate (4100312-DUP6)					Prepared: 10/10/14 16:00		Analyzed: 10/13/14 10:10					
QC Source Sample: Other (A4J0273-02)												
EPA 8000C												
% Solids	**80.6**	---	1.00	% by Weight	1	---	81.1	---	---	0.6	20%	

Apex Laboratories



Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

SAMPLE PREPARATION INFORMATION

Diesel and Oil Hydrocarbons by NWTPH-Dx

Prep: EPA 3546 (Fuels)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 4100351							
A4J0221-01	Soil	NWTPH-Dx	10/07/14 11:30	10/13/14 14:35	14.36g/5mL	10g/5mL	0.70
A4J0221-02	Soil	NWTPH-Dx	10/07/14 11:30	10/13/14 14:35	14.5g/5mL	10g/5mL	0.69

Polychlorinated Biphenyls -- EPA 8082A

Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 4100379							
A4J0221-01RE1	Soil	EPA 8082A	10/07/14 11:30	10/14/14 08:30	13.79g/2mL	10g/2mL	0.73
A4J0221-02RE2	Soil	EPA 8082A	10/07/14 11:30	10/14/14 08:30	11.44g/2mL	10g/2mL	0.87

Organochlorine Pesticides by EPA 8081B

Prep: EPA 3546/3640A (GPC)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 4100469							
A4J0221-01RE1	Soil	EPA 8081B	10/07/14 11:30	10/16/14 10:20	13.88g/10mL	10g/5mL	1.44
A4J0221-02RE1	Soil	EPA 8081B	10/07/14 11:30	10/16/14 10:20	14.36g/10mL	10g/5mL	1.39

Semivolatile Organic Compounds by EPA 8270D

Prep: EPA 3546

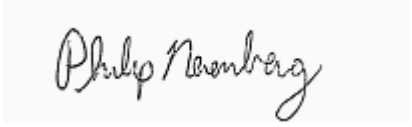
Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 4100378							
A4J0221-01RE1	Soil	EPA 8270D	10/07/14 11:30	10/14/14 07:54	15.59g/2mL	15g/2mL	0.96
A4J0221-02RE2	Soil	EPA 8270D	10/07/14 11:30	10/14/14 07:54	15.21g/2mL	15g/2mL	0.99

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 4100425							
A4J0221-02	Soil	EPA 8270D (SIM)	10/07/14 11:30	10/15/14 10:28	10.09g/5mL	10g/5mL	0.99
Batch: 4100499							
A4J0221-01RE1	Soil	EPA 8270D (SIM)	10/07/14 11:30	10/17/14 07:32	12.42g/5mL	10g/5mL	0.81

Apex Laboratories



Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

SAMPLE PREPARATION INFORMATION

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor

Total Metals by EPA 6020 (ICPMS)

Prep: EPA 3051A

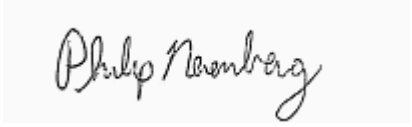
Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 4100470							
A4J0221-01	Soil	EPA 6020A	10/07/14 11:30	10/16/14 10:49	0.502g/50mL	0.5g/50mL	1.00
A4J0221-01RE1	Soil	EPA 6020A	10/07/14 11:30	10/16/14 10:49	0.502g/50mL	0.5g/50mL	1.00
A4J0221-02	Soil	EPA 6020A	10/07/14 11:30	10/16/14 10:49	0.484g/50mL	0.5g/50mL	1.03
A4J0221-02RE1	Soil	EPA 6020A	10/07/14 11:30	10/16/14 10:49	0.484g/50mL	0.5g/50mL	1.03

Percent Dry Weight

Prep: Total Solids (Dry Weight)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 4100312							
A4J0221-01	Soil	EPA 8000C	10/07/14 11:30	10/10/14 11:27	1N/A/1N/A	1N/A/1N/A	NA
A4J0221-02	Soil	EPA 8000C	10/07/14 11:30	10/10/14 11:27	1N/A/1N/A	1N/A/1N/A	NA

Apex Laboratories



Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

Notes and Definitions

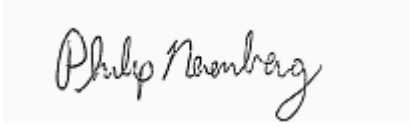
Qualifiers:

B-02	Analyte detected in an associated blank at a level between one-half the MRL and the MRL. (See Notes and Conventions below.)
C-05	Extract has undergone a GPC (Gel-Permeation Chromatography) cleanup per EPA 3640A. Reporting levels may be raised due to dilution necessary for cleanup. Sample Final Volume includes the GPC dilution factor, see the Prep page for details.
C-07	Extract has undergone Sulfuric Acid Cleanup by EPA 3665A, Sulfur Cleanup by EPA 3660B, and Florisil Cleanup by EPA 3620B in order to minimize matrix interference.
F-11	The hydrocarbon pattern indicates possible weathered diesel, or a contribution from a related component.
F-15	Results for diesel are estimated due to overlap from the reported oil result.
F-16	Results for oil are estimated due to overlap from the reported diesel result.
J	Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified MDL.
Q-03	Spike recovery and/or RPD is outside control limits due to the high concentration of analyte present in the sample.
Q-04	Spike recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
Q-26	Peak separation for Benzo(b) and Benzo(k)fluoranthenes does not meet method specified criteria. Reported result includes the combined area of the two isomers and should be considered the total of Benzo(b+k)Fluoranthenes.
Q-31	Estimated Results. Recovery of Continuing Calibration Verification sample below lower control limit for this analyte. Results are likely biased low.
Q-41	Estimated Results. Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Results are likely biased high.
R-02	The Reporting Limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.
S-01	Surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interference.
T-02	This Batch QC sample was analyzed outside of the method specified 12 hour tune window. Results are estimated.

Notes and Conventions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry'designation are not dry weight corrected.
RPD	Relative Percent Difference
MDL	If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
WMSC	Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
Batch QC	In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.

Apex Laboratories



Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08

Blank Policy

Apex assesses blank data for potential high bias down to a level equal to ½ the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses.

For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor.

Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.

QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

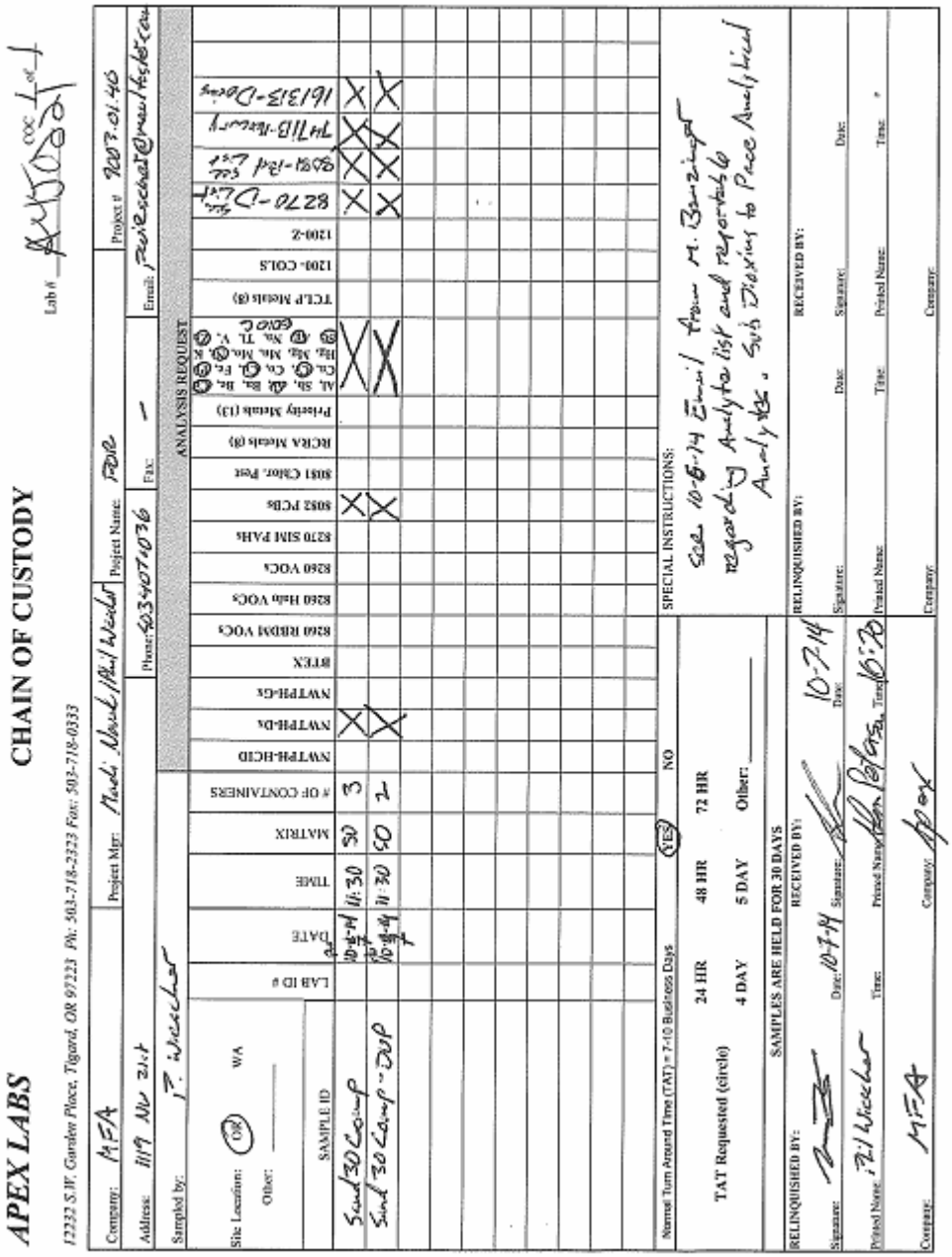
***

Used to indicate a possible discrepency with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Maul Foster & Alongi, INC.	Project: **Port of Ridgefield Discrete**	
2001 NW 19th Ave, STE 200	Project Number: 9003.01.40	**Reported:**
Portland, OR 97209	Project Manager: Madi Novak	10/24/14 16:08



Apex Laboratories

Philip Nerenberg

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Philip Nerenberg, Lab Director

DATA QUALITY ASSURANCE/QUALITY CONTROL REVIEW

PROJECT NO. 9003.01.40 | NOVEMBER 4, 2014 | PORT OF RIDGEFIELD

This report reviews the analytical results for imported fill sand samples collected by the Maul Foster & Alongi, Inc. (MFA) project team on the Lake River site near the Lake River Industrial Site in Ridgefield, Washington. The samples were collected on October 7, 2014.

Apex Laboratories, LLC (Apex) and Pace Analytical (PA) performed the analyses. Apex report number A4J0221 and PA report number 10285800 were reviewed. The analyses performed and samples analyzed are listed below. Some analyses may not have been performed on all samples. Data validation tracking sheets associated with the analyses, which document data review, are attached.

Analysis	Reference
Diesel and Lube Oil/Motor Oil	NWTPH-Dx
Dioxins/Furans	USEPA 1613B
Metals	USEPA 6020
Organochlorine Pesticides	USEPA 8081B
Polychlorinated Biphenyl (PCB) Aroclors	USEPA 8082A
Polycyclic Aromatic Hydrocarbons	USEPA 8270D SIM
Semivolatile Organic Compounds (SVOCs)	USEPA 8270D

USEPA = U.S. Environmental Protection Agency.
NWTPH = Northwest Total Petroleum Hydrocarbons.

Samples Analyzed	
Report A4J0221	**Report 10285800**
Sand30Comp	Sand30Comp
Sand30Comp-Dup	Sand30Comp-Dup

DATA QUALIFICATIONS

Analytical results were evaluated according to applicable sections of USEPA procedures (USEPA, 2008, 2010, 2011), appropriate laboratory and method-specific guidelines (Apex, 2014; PA, 2014; USEPA, 1986), and the dioxin rules memorandum developed by MFA and approved by the Washington State Department of Ecology (MFA, 2012).

In report 10285800, some USEPA Method 1613B results detected below the reporting limit (RL) were reported as estimated maximum potential concentrations (EMPCs). These results were assigned a "U" qualifier (non-detect) at the reported EMPC value by the reviewer.

Report	Sample	Component	Original Result (ng/kg)	Qualified Result (ng/kg)
10285800	Sand30Comp-Dup	2,3,7,8-TCDF	0.11 J	0.11 U
10285800	Sand30Comp-Dup	1,2,3,4,6,7,8-HpCDD	0.38 J	0.38 U
10285800	Sand30Comp-Dup	OCDD	2.60 J	2.60 U

The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

HOLDING TIMES, PRESERVATION, AND SAMPLE STORAGE

Holding Times

Extractions and analyses were performed within the recommended holding time criteria.

Preservation and Sample Storage

The samples were preserved and stored appropriately.

BLANKS

Method Blanks

Laboratory method blank analyses were performed at the required frequencies. For purposes of data qualification, the method blanks were associated with all samples prepared in the analytical batch. All laboratory method blanks were non-detect.

Continuing Calibration Blanks (CCBs)

CCBs were provided for some analyses. All CCBs were non-detect.

Trip Blanks

Trip blanks were not required for this sampling event because samples were not analyzed for volatile organic compounds.

Equipment Rinsate Blanks

Equipment rinsate blanks were not required for this sampling event, as all samples were collected using dedicated, single-use equipment.

SURROGATE RECOVERY RESULTS

The samples were spiked with surrogate compounds to evaluate laboratory performance on individual samples. The laboratory appropriately documented and qualified surrogate outliers. Associated batch quality assurance/quality control for samples with surrogate

outliers were within acceptance limits. Minor surrogate percent recovery exceedances or upper percent recovery exceedances associated with non-detect results were not qualified by the reviewer.

All remaining surrogate recoveries were within acceptance limits.

LABELED ANALOG RECOVERY RESULTS

In report 10285800, USEPA Method 1613B samples and associated batch QC samples were spiked with carbon-13 (C13) labeled standards to quantify the relative response of analytes in each sample. The laboratory stated in the case narrative that associated sample results are quantified using labeled analog results and are automatically adjusted for labeled analog percent recovery. All C13 labeled analog standard recoveries were within acceptance limits.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) RESULTS

MS/MSD results are used to evaluate laboratory precision and accuracy. All MS/MSD samples were extracted and analyzed at the required frequency.

In report A4J0221, the USEPA Method 8081B MS 4,4'-DDD and endrin results were flagged by the laboratory due to association with continuing calibration verification (CCV) results that were above percent recovery acceptance limits. The MS and remaining batch QC had acceptable percent recoveries for 4,4'-DDD and endrin, and the associated samples were non-detect; thus, no results were qualified.

In report A4J0221, various USEPA 6020 MS results exceeded control limits due to high concentrations and sample matrix heterogeneity. Remaining batch QC met acceptance limits and the MS/MSD were prepared with samples from unrelated projects, so the matrices did not represent those of samples in A4J0221. No results were qualified.

All remaining MS/MSD recoveries were within acceptance limits for percent recovery and relative percent differences (RPDs).

LABORATORY DUPLICATE RESULTS

Duplicate results are used to evaluate laboratory precision. All laboratory duplicate samples were extracted and analyzed at the required frequency. All laboratory duplicate RPDs were within acceptance limits.

LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE (LCS/LCSD) RESULTS

An LCS/LCSD is spiked with target analytes to provide information on laboratory precision and accuracy. The LCS/LCSD samples were extracted and analyzed at the required frequency. All LCS/LCSD results were within acceptance limits for percent recovery and RPD.

FIELD DUPLICATE RESULTS

Field duplicate samples measure both field and laboratory precision. One field duplicate was submitted for analysis (Sand30Comp/Sand30Comp-Dup). MFA uses acceptance criteria of 100 percent RPD for results that are less than five times the MRL, or 50 percent RPD for results that are greater than five times the MRL. Non-detect data are not used in the evaluation of field duplicate results. All field duplicate results met acceptance criteria.

CCV AND INITIAL CALIBRATION VERIFICATION (ICV) RESULTS

CCV and ICV results are used to demonstrate instrument precision and accuracy through the end of the sample batch. CCV and ICV results were not reported by Apex.

In report A4J0221, various batch surrogate and batch QC results were flagged by the laboratory due to associated CCV results that exceeded control limits. The surrogate and batch QC results, along with associated batch QC, met acceptance criteria for percent recovery; thus, no results were qualified.

The reviewer confirmed with the laboratory that the remaining CCVs and ICVs were within acceptance limits for percent recovery.

REPORTING LIMITS

Apex used routine RLs for non-detect results for NWTPH-Dx. Apex reported all other results at method detection limits (MDLs). RLs and MDLs were raised when samples required dilutions because of extract cleanup or matrix interference. PA used estimated detection limits (EDLs) for non-detect results. USEPA Method 1613B detections between the RL and the EDL were qualified as estimated (J) by the laboratory.

DATA PACKAGE

The data packages were reviewed for transcription errors, omissions, and anomalies.

In report 10285800, the USEPA Method 1613B EDL column header in the sample results and method blank pages is labeled as "RL" instead of "EDL." The reviewer confirmed with PA that the column header should be "EDL" and cannot currently be changed by the laboratory. The reviewer also confirmed with PA that the reported values in this column are EDL values.

No additional issues were found.

REFERENCES

Apex. 2014. Quality Assurance Manual. Apex Laboratories, LLC. Tigard, Oregon.

PA. 2014. Quality Assurance Manual. Pace Analytical. Minneapolis, Minnesota.

MFA. 2012. Dioxin and furan analysis, data validation, and TEQ calculation rules. Maul Foster and Alongi, Inc. December.

USEPA. 1986. Test methods for evaluating solid waste: physical/chemical methods. EPA-530/SW-846. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. September (revision 6, February 2007).

USEPA. 2008. USEPA contract laboratory program, national functional guidelines for organics data review. EPA 540/R-08/01. U.S. Environmental Protection Agency, Office of Emergency and Remedial Response. June.

USEPA. 2010. USEPA contract laboratory program national functional guidelines for inorganic superfund data review. EPA 540/R-10/011. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. January.

USEPA. 2011. USEPA contract laboratory program, national functional guidelines for chlorinated dibenzo-p-dioxins (CDDs) and chlorinated dibenzofurans (CDFs) data review. EPA-540-R-11-016. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. September.

ATTACHMENT

DATA VALIDATION TRACKING

DATA VALIDATION TRACKING

This document tracks Stage 2A validation completion for the analysis indicated below.

Lab Report	A4J0221
Analysis/Method	NWTPH-Dx
Batch Number(s)	4100351

Reviewer	MEB
Date	10/23/2014

	Validation Area	Acceptable Yes/No/NA/NR	Comments	Q
Sample	Temperature	Yes		
	Holding Time	Yes		
	Trip Blank	NA		
	Field/Eq. Blank	NA		
	Field Dup RPD	NA		
Calibr.	CCB	NA		
	ICV	NA		
	CCV	NR		
Batch	Method Blank	Yes		
	LCS/LCSD %	Yes	No Lube Oil LCS per method, confirmed with Apex.	
	LCS/LCSD RPD	NA		
	Lab Dup RPD	Yes		
	MS/MSD %	NA		
	MS/MSD RPD	NA		
General	Dilution	Yes		
	Reporting Limit	Yes		
	MDL	NA		
	Surrogates	Yes		
Dioxins	Labeled Analog	NA		
	EMPC	NA		
	2378-TCDF	NA		

Samples reviewed (in bold font):			
Sand30Comp	-	-	-
Sand30Comp-Dup	-	-	-
-	-	-	-

Notes:

Definitions:
Calibr. = calibration.
EMPC = estimated maximum potential concentration.
MDL = method detection limit.
NA = not applicable.
NR = not reported.
Q = qualifier.

DATA VALIDATION TRACKING

This document tracks Stage 2A validation completion for the analysis indicated below.

Lab Report	A4J0221
Analysis/Method	USEPA 8082A
Batch Number(s)	4100379

Reviewer	MEB
Date	10/23/2014

	Validation Area	Acceptable Yes/No/NA/NR	Comments	Q
Sample	Temperature	Yes		
	Holding Time	Yes		
	Trip Blank	NA		
	Field/Eq. Blank	NA		
	Field Dup RPD	NA		
Calibr.	CCB	NA		
	ICV	NA		
	CCV	NR		
Batch	Method Blank	Yes		
	LCS/LCSD %	Yes		
	LCS/LCSD RPD	NA		
	Lab Dup RPD	Yes		
	MS/MSD %	Yes		
	MS/MSD RPD	NA		
General	Dilution	Yes		
	Reporting Limit	Yes		
	MDL	Yes		
	Surrogates	Yes		
Dioxins	Labeled Analog	NA		
	EMPC	NA		
	2378-TCDF	NA		

Samples reviewed (in bold font):			
Sand30Comp	-	-	-
Sand30Comp-Dup	-	-	-
-	-	-	-

Notes:
Definitions:

DATA VALIDATION TRACKING

This document tracks Stage 2A validation completion for the analysis indicated below.

Lab Report	A4J0221
Analysis/Method	USEPA 8081B
Batch Number(s)	4100469

Reviewer	MEB
Date	10/23/2014

	Validation Area	Acceptable Yes/No/NA/NR	Comments	Q
Sample	Temperature	Yes		
	Holding Time	Yes		
	Trip Blank	NA		
	Field/Eq. Blank	NA		
	Field Dup RPD	NA		
Calibr.	CCB	NA		
	ICV	NA		
	CCV	NR	See notes.	
Batch	Method Blank	Yes		
	LCS/LCSD %	Yes		
	LCS/LCSD RPD	NA		
	Lab Dup RPD	Yes	Note: non-project lab dup reporting limits raised due to matrix interference.	
	MS/MSD %	No	See notes.	
	MS/MSD RPD	NA		
General	Dilution	Yes		
	Reporting Limit	Yes		
	MDL	Yes		
	Surrogates	Yes		
Dioxins	Labeled Analog	NA		
	EMPC	NA		
	2378-TCDF	NA		

Samples reviewed (in bold font):			
Sand30Comp	-	-	-
Sand30Comp-Dup	-	-	-
-	-	-	-

Notes:

CCV for surrogate 2,4,5,6-TCMX is flagged as being low for both samples and batch QC. Surrogate percent recoveries for both surrogates are within acceptance limits, so no results are qualified.

MS 4,4'-DDD and endrin results are flagged due to CCV results above percent recovery acceptance limits, which indicate a potential high bias. MS and remaining batch QC results have acceptable percent recoveries. Associated samples are non-detect; thus, no results are qualified.

Definitions:

DATA VALIDATION TRACKING

This document tracks Stage 2A validation completion for the analysis indicated below.

Lab Report	A4J0221
Analysis/Method	USEPA 8270D
Batch Number(s)	4100378

Reviewer	MEB
Date	10/23/2014

	Validation Area	Acceptable Yes/No/NA/NR	Comments	Q
Sample	Temperature	Yes		
	Holding Time	Yes		
	Trip Blank	NA		
	Field/Eq. Blank	NA		
	Field Dup RPD	NA		
Calibr.	CCB	NA		
	ICV	NA		
	CCV	NR	See notes.	
Batch	Method Blank	Yes		
	LCS/LCSD %	Yes		
	LCS/LCSD RPD	NA		
	Lab Dup RPD	Yes		
	MS/MSD %	Yes		
	MS/MSD RPD	NA		
General	Dilution	Yes		
	Reporting Limit	Yes		
	MDL	Yes		
	Surrogates	Yes		
Dioxins	Labeled Analog	NA		
	EMPC	NA		
	2378-TCDF	NA		

Samples reviewed (in bold font):			
Sand30Comp	-	-	-
Sand30Comp-Dup	-	-	-

Notes:

CCV results were above upper acceptance limits for surrogate 2,4,6-tribromophenol, the method blank, and LCS. Surrogate results are within acceptance limits, so no qualifications were made by the reviewer.

Definitions:

DATA VALIDATION TRACKING

This document tracks Stage 2A validation completion for the analysis indicated below.

Lab Report	A4J0221
Analysis/Method	USEPA 8270D
Batch Number(s)	4100425

Reviewer	MEB
Date	10/24/2014

	Validation Area	Acceptable Yes/No/NA/NR	Comments	Q
Sample	Temperature	Yes		
	Holding Time	Yes		
	Trip Blank	NA		
	Field/Eq. Blank	NA		
	Field Dup RPD	NA		
Calibr.	CCB	NA		
	ICV	NA		
	CCV	NR		
Batch	Method Blank	No	Detections below RL. See notes.	
	LCS/LCSD %	Yes		
	LCS/LCSD RPD	NA		
	Lab Dup RPD	Yes		
	MS/MSD %	Yes		
	MS/MSD RPD	NA		
General	Dilution	Yes		
	Reporting Limit	Yes		
	MDL	Yes		
	Surrogates	Yes		
Dioxins	Labeled Analog	NA		
	EMPC	NA		
	2378-TCDF	NA		

Samples reviewed (in bold font):			
Sand30Comp	-	-	-
Sand30Comp-Dup	-	-	-

Notes:

Batch 4100425 Method blank detections for fluoranthene (5.25 ug/kg), phenanthrene (3.93 ug/kg), and pyrene (3.77 ug/kg) below RL of 7.14 ug/kg. Sample is non-detect for all target analytes; thus, no results are qualified.

Definitions:

DATA VALIDATION TRACKING

This document tracks Stage 2A validation completion for the analysis indicated below.

Lab Report	A4J0221
Analysis/Method	USEPA 8270D SIM
Batch Number(s)	4100499

Reviewer	MEB
Date	10/24/2014

	Validation Area	Acceptable Yes/No/NA/NR	Comments	Q
Sample	Temperature	Yes		
	Holding Time	Yes		
	Trip Blank	NA		
	Field/Eq. Blank	NA		
	Field Dup RPD	NA		
Calibr.	CCB	NA		
	ICV	NA		
	CCV	NR		
Batch	Method Blank	No	Detections below RL. See notes.	
	LCS/LCSD %	Yes		
	LCS/LCSD RPD	NA		
	Lab Dup RPD	Yes		
	MS/MSD %	Yes		
	MS/MSD RPD	NA		
General	Dilution	Yes		
	Reporting Limit	Yes		
	MDL	Yes		
	Surrogates	Yes		
Dioxins	Labeled Analog	NA		
	EMPC	NA		
	2378-TCDF	NA		

Samples reviewed (in bold font):			
Sand30Comp	-	-	-
Sand30Comp-Dup	-	-	-

Notes:

Batch 4100499 Method blank detection for 2-methylnaphthalene (5.32 ug/kg) below RL of 7.69 ug/kg. Sample is non-detect for all target analytes; thus, no results are qualified.

Definitions:

DATA VALIDATION TRACKING

This document tracks Stage 2A validation completion for the analysis indicated below.

Lab Report	A4J0221
Analysis/Method	USEPA 6020
Batch Number(s)	4100470

Reviewer	MEB
Date	10/23/2014

	Validation Area	Acceptable Yes/No/NA/NR	Comments	Q
Sample	Temperature	Yes		
	Holding Time	Yes		
	Trip Blank	NA		
	Field/Eq. Blank	NA		
	Field Dup RPD	NA		
Calibr.	CCB	NA		
	ICV	NA		
	CCV	NR		
Batch	Method Blank	Yes		
	LCS/LCSD %	Yes		
	LCS/LCSD RPD	NA		
	Lab Dup RPD	No	Chromium = 71%. Zinc = 50%. Sample is from a different project. No qualification due to likely different matrix and acceptable LCS and MS1/MS2 for chromium and zinc.	
	MS/MSD %	No	See notes.	
	MS/MSD RPD			
General	Dilution	Yes		
	Reporting Limit	Yes		
	MDL	Yes		
	Surrogates	NA		
Dioxins	Labeled Analog	NA		
	EMPC	NA		
	2378-TCDF	NA		

Samples reviewed (in bold font):			
Sand30Comp	-	-	-
Sand30Comp-Dup	-	-	-

Notes:

MS1 Copper = 134%. MS1 prepared with sample from unrelated project. Lab noted that exceedance was likely due to non-homogenous sample matrix. Matrix does not likely represent matrix of samples in A4J0221. Remaining results and batch QC have acceptable recoveries. No qualification.

MS2 Copper = 403%. Zinc = -133% due to high concentrations of analyte present in the sample. MS2 prepared with sample from unrelated project. Matrix does not likely represent matrix of samples in A4J0221. Remaining MS2 results and associated batch QC have acceptable recoveries. No qualification.

MS2 Mercury result flagged by lab due to association with CCV that has high percent recovery. MS2 result is within acceptance limits for percent recovery; thus, no results are qualified.

Definitions:

DATA VALIDATION TRACKING

This document tracks Stage 2A validation completion for the analysis indicated below.

Lab Report	10285800
Analysis/Method	USEPA 1613B
Batch Number(s)	42572

Reviewer	MEB
Date	11/4/2014

	Validation Area	Acceptable Yes/No/NA/NR	Comments	Q
Sample	Temperature	Yes		
	Holding Time	Yes		
	Trip Blank	NA		
	Field/Eq. Blank	NA		
	Field Dup RPD	NA		
Calibr.	CCB	NA		
	ICV	Yes		
	CCV	Yes		
Batch	Method Blank	Yes		
	LCS/LCSD %	Yes		
	LCS/LCSD RPD	NA		
	Lab Dup RPD	NA		
	MS/MSD %	NR		
	MS/MSD RPD	NR		
General	Dilution	Yes		
	Reporting Limit	NA		
	MDL	Yes	Confirmed with Pace that values reported as RLs are EDLs.	
	Surrogates	NA		
Dioxins	Labeled Analog	Yes		
	EMPC	No	See notes.	U
	2378-TCDF	Yes	Reviewer confirmed with Pace that the column can resolve 2,3,7,8-TCDF.	

Samples reviewed (in bold font):			
Sand30Comp	-	-	-
Sand30Comp-Dup	-	-	-

Notes:

Some field duplicate sample results detected below the reporting limit (RL) EMPCs. These results are assigned a "U" qualifier (non-detect) at the reported EMPC value by the reviewer.

Definitions:

APPENDIX E

ARCHAEOLOGICAL REPORTS

Legal description: T 4N, R 1W, Sec 13, 24
County: Clark
USGS quad: *Ridgefield, Wash.*
Project Acreage: ca. 3
Acres Surveyed: ca. 3
Findings: +
Fieldnotes: WillametteCRA office
Curation: Burke Museum

Archaeological Survey for the Lake River Remedial Action Project (NWS-2013-875) Clark County, Washington Technical Memorandum

Prepared by
Kanani Paraso, M.A., R.P.A

November 19, 2014

Prepared for
Maul Foster & Alongi, Inc.
Vancouver, Washington

Willamette Cultural Resources Associates, Ltd.

Portland, Oregon

WillametteCRA Report Number 12-35

TECHNICAL MEMORANDUM

Archaeological Survey for the Lake River Remedial Action Project (NWS-2013-875) Clark County, Washington

Kanani Paraso, M.A., R.P.A

November 19, 2014

Introduction

Maul Foster & Alongi, Inc. (MFA) contracted with Willamette Cultural Resources Associates, Ltd. (WillametteCRA), to conduct an archaeological survey for the Lake River Remedial Action project in Clark County, Washington. The project is being conducted under Nationwide Permit 38 (NWS-2013-875) issued by the U.S. Army Corps of Engineers (USACE) to the Port of Ridgefield (Port) on September 25, 2014. The project area is on and adjacent to land owned by the Port in Township 4 North, Range 1 West, Sections 13 and 24, Willamette Meridian (Figure 1).

The former Pacific Wood Treating Company (PWT) operated a wood-treating facility from 1964 to 1993 at the Port's Lake River Industrial Site (LRIS). Operation of the facility led to deposits of hazardous substances (i.e., wood-treating-related chemicals) in nearby Lake River and Carty Lake. The selected cleanup action for these substances includes bank stabilization, mechanical dredging of contaminated sediments and enhanced natural recovery of Lake River. To limit further movement of contaminated sediments into the river, the bank stabilization will entail covering the shore with a geotextile filter fabric and a fish mix rock stabilization layer.

MFA contracted with WillametteCRA to conduct archaeological monitoring of the Lake River shoreline. All work was conducted consistent with the requirements of NWS-2013-875, which specifies archaeological monitoring shall be conducted as detailed in the "Final Archaeological Monitoring and Inadvertent Discovery Plan for the Lake River Remedial Action" (WillametteCRA 2014). On September 3, 2014, WillametteCRA archaeologists Kanani Paraso, M.A., and Michael Daniels surveyed the Lake River shoreline and identified one multicomponent site, a small artifact scatter 45CL1087 (temporary field number 12-35-LRS-1) composed of two historic glass fragments and approximately 10 pieces of fire-cracked rock (Figure 2). The site represents a redeposited surface scatter and no intact artifacts or features were observed in the immediate vicinity. Based on the findings, it is WillametteCRA's professional opinion that the proposed bank stabilization and cleanup action may proceed as planned. This technical memorandum presents the results of our

study and provides recommendations for further action should unanticipated archaeological resources be encountered.

Regulatory Context

The selected cleanup actions involve coordination among one state and one federal agency. The Washington Department of Ecology (Ecology) is the lead State agency for the cleanup under the Washington Model Toxics Control Act. Cleanup actions in Lake River required obtaining a Section 10 permit from the USACE under the River and Harbors Act of 1899 and a Section 404 permit under the Clean Water Act. USACE issued Nationwide Permit 38 (NWS-2013-875) authorizing cleanup work under both Section 404 and Section 10 on September 25, 2014. Given the involvement of the USACE, the selected cleanup actions are subject to the provisions of the National Historic Preservation Act (NHPA) and its implementing regulations (36CFR800). The Washington Department of Archaeology and Historic Preservation (DAHP) has the lead responsibility for ensuring compliance with State laws that protect archaeological resources and Indian graves in Washington (RCW 25-48, 27.44, 27-53, and 68.60).

Previous Archaeological Investigations

Two precontact archaeological sites have been identified in the immediate vicinity of the Lake River area. Site 45CL108 is on the west bank of Lake River in the project area; 45CL4 is on the east bank of the river (see Figure 2). Site 35CL108 is known only from exposures of archaeological deposits in the river bank and eroded material on the adjacent beach. Artifacts associated with 35CL108 include hammerstones, lithic debitage, and fire-cracked rock (FCR). Site 45CL4 is listed on the National Register of Historic Places as a contributing resource in the Vancouver Lakes Archaeological District. It was first recorded in 1948 (Smith and Hudziak 1948) and has been the subject of several systematic field investigations since the 1970s (Abramowitz 1980:53; Bourdeau 2004:21; Minor and Toepel 1985:4, 42; Reese et al. 2012:3, 6; Ross and Starkey 1975:21; Saul 1976). Artifacts associated with 45CL4 have included FCR, lithic debitage, complete and fragmentary projectile points, hammerstones, cobble choppers, a maul, and other tools or tool fragments as well as historic artifacts such as glass, window glass, and ceramics. Excavations in 1984 (Minor and Toepel 1985) concluded 45CL4 represents a series of small campsites occupied throughout the late prehistoric and early historic-period. While most of the early studies addressed only that portion of the site that is presently situated on the Ridgefield National Wildlife Refuge, the site boundaries were extended to the south of the refuge and into the former PWT location only recently. Remedial actions at the former PWT location in late summer 2012 exposed intact archaeological deposits along the Lake River shoreline and were identified as part of 45CL4. Radiocarbon dates from the 2012 field investigations indicated the southern portion of the site was occupied between circa 200-300 years ago (Reese et al. 2013). After the exposed deposits were documented, minor adjustments in the remedial actions allowed remediation to continue while protecting the deposits from further

disturbance (Reese et al. 2013). Both 45CL108 and 45CL4 have been subject in the past and continue to be subject to considerable erosion, with artifacts present on the beach at both sites.

A series of cores were excavated in the Lake River channel in December 2012 to determine the boundaries of contaminated sediments in the channel. Archaeological monitoring of those cores identified artifacts in two samples. One core (LRIS-109) produced a colorless glass bottle neck fragment. Based on the character of the threads on the neck, this item probably postdates 1930. The second core (LRIS-126) produced four pieces of FCR and a lithic tool fragment. The glass bottle fragment was encountered at 125 centimeters (cm) (38 inches [in.]) below the present riverbed. The precontact artifacts in LRIS-126 were recorded at depths ranging from 80 to 125 cm (24-38 in.) below the current riverbed (WillametteCRA 2013). A subsequent analysis (Ellis 2013) concluded that the precontact artifacts do not appear to have been *in situ* but were in sediments that probably postdate 1970 and redeposited through dredging, erosion, and river traffic. The source of the riverbed artifacts cannot be determined with any certainty but 45CL4 is the most likely source given proximity of LRIS-126 to that site.

Field Investigations

On September 3, 2014, WillametteCRA archaeologist Kanani Paraso, M.A., and Michael Daniels surveyed the Lake River shoreline between the boat harbor and the pump house. The fieldwork was performed in accordance with the inadvertent discovery plan prepared by WillametteCRA (WillametteCRA 2014). The fieldwork was coordinated with Phil Wiescher, MFA; Josh Elliott, MFA, met the crew on-site.

Methods

Field Methods

The WillametteCRA crew surveyed the shoreline from south to north in two transects spaced no more than 2 meters (m) apart. The ground cover consisted of areas of exposed sand, river cobbles and rock fill, grass, shrubs, and small trees. The area along the cut bank tended to be more heavily vegetated; in general there was about 50 percent ground surface visibility. The ground surface and exposed cut banks were carefully examined for evidence of archaeological material. When artifacts were identified, the space between transects was reduced to less than 1 m apart and the area was examined more closely. The survey identified one archaeological resource, the boundary of which was recorded with a Global Positioning System (GPS) unit capable of sub-meter accuracy. Only diagnostic artifacts were collected during the survey; the remaining artifacts were recorded in the field and left in place. WillametteCRA prepared and submitted the Washington DAHP archaeological site form (Appendix A).

Laboratory and Analytical Methods

Only diagnostic artifacts were collected during the survey. The field crew collected two temporally diagnostic, historic-era artifacts and brought them to the WillametteCRA laboratory for analysis. WillametteCRA archaeologist Breanne Taylor analyzed the historic artifacts. Ms. Taylor assigned lot and specimen numbers to the material, analyzed each artifact and entered the results in a database spreadsheet. The artifact analysis is presented in Appendix B.

Historic Artifact Analysis

Historic artifacts were classified by function and material type and assigned temporal ranges when possible. We assign each artifact into a primary functional group and two subgroups. Items that cannot be definitively assigned to a functional group are placed in the Unknown category. This group often comprises a large portion of an historic assemblage at archaeological sites due to the difficulty in assigning highly fragmentary items to definitive functional groups. Small shards of glass for example, are especially problematic to classify because although they are likely from an alcohol bottle, a personal item, it is often impossible to rule out the possibility that they were from some other domestic item, such as a vase or drinking glass. Date ranges for individual artifacts are assigned based on material types, manufacture techniques, and production dates of specific products when possible. Site age is determined through temporally diagnostic artifacts, mainly glass and ceramic items with lips, seams, and maker's marks.

Curation

Artifacts and supporting field documents (e.g., field forms, photographs, artifact analysis databases) will be curated at the Burke Museum. All material will be prepared in accordance with the curation guidelines outlined by the Burke Museum following completion of the project.

Results of Field Investigations

WillametteCRA archaeologists surveyed approximately 3 acres of the Lake River shoreline. During the survey, the crew identified one new multicomponent archaeological site 45CL1087. The site is described below; a Washington DAHP site form is included as Appendix A to this report.

Site 45CL1087 – Multicomponent artifact scatter

Site 45CL1087 is a multicomponent artifact scatter composed of 10 pieces of fire-cracked rock (FCR) and two bottle base fragments. The artifacts were observed in an area of the shoreline with naturally occurring unmodified river cobbles (Figure 3 and Figure 4). The artifacts were recorded within a 5 m wide by 25 m long area. The FCR were scattered throughout, while the two bottle base fragments were recorded near the northern site boundary. The crew examined the adjacent cut bank

for evidence of associated intact archaeological deposits (i.e., hearth feature, charcoal, midden, additional FCR) but none was found.

The two historic artifacts fall into the Domestic classification category and the Food subcategory. Both are glass bottle base fragments (Figure 5). One is a colorless machine-made bottle base with "4/5 quart" embossed on the side and Owens Illinois and Duraglas maker's marks on the base. The Duraglas mark has a date range between 1940 and 1964. The bottle base was manufactured at Plant 23 in Los Angeles, which operated after 1949, providing a diagnostic range of 1949-1964 for this artifact (Toulouse 1971). The second bottle base is oval-shaped with no maker's mark or other markings. It is amethyst in color, which indicates that it was manufactured prior to 1920. The amethyst color of the vessel is the result of manganese dioxide decoloration; a process that occurs to colorless glass with a manganese agent when it is exposed to UV light for an extended period of time. Manganese was commonly used as a glass additive between the 1880s until the end of World War I (Society for Historical Archaeology 2014).

In all, the site appears to be a redeposited surface scatter of limited FCR and historic domestic refuse items. The site is less than 300 m upstream (southeast) from 45CL4 and approximately 200 m upstream and across the river from 45CL108. The source of the FCR cannot be determined with any certainty but 45CL4 is the most likely source given its proximity to the site. Collectively, the historic artifacts span pre-1920 to at least 1964. Numerous documents provide information on use of the area in the historic period and provide evidence for use over a substantial period of time. The project area is within a Donation Land Claim (DLC) belonging to James Carty (GLO 1863). The claim was recorded as DLC 48 in 1851 and the property remained in the Carty family until 1965 when it was purchased by the U.S. Fish and Wildlife Service. Historic maps indicate the Carty residence had moved at least once during that time. The original residence was situated on the west side of Carty Lake in 1854 and a later residence and outbuildings are shown on the east side of the lake by 1909 (GLO 1854; U.S. Coast and Geodetic Survey [USC&GS] 1909). Therefore, the Carty residence is a potential source of the historic-period artifacts identified at 45CL1087. Another potential source may be the early operations at the Pacific Wood Treating Company which operated from 1964 to 1993.

Conclusions

In accordance with the inadvertent discovery plan WillametteCRA has completed an archaeological survey for the Lake River Remedial Action project. Our survey identified one new multicomponent archaeological site composed of FCR and early to mid-twentieth century domestic refuse comprised of two temporally diagnostic bottle bases (temporary field no. 12-35-LRS-1). The FCR was recorded and left in place, while the two bottle bases were collected. Those materials will be curated at the Burke Museum. The site represents a redeposited surface scatter and no intact

artifacts or features were observed in the adjacent cut bank. It is WillametteCRA's professional opinion that the proposed bank stabilization and cleanup action may proceed as planned.

Should unanticipated archaeological resources be encountered during future activities at this location, all ground-disturbing activity in the vicinity of the find should be halted and the Washington DAHP notified immediately. Pursuant to RCW 27.44.055 and 68.60.055, in the event that evidence of human skeletal remains is encountered during future work, all ground-disturbing activity in the vicinity of the discovery should be halted immediately, and the Clark County Coroner and the Clark County Sheriff's Department immediately notified. All activity must cease that may cause further disturbance to those remains and the area of the find must be secured and protected from further disturbance and exposure to rain, wind, etc. The remains should not be touched, moved, or further disturbed.

The County Coroner will assume jurisdiction over the human skeletal remains and make a determination of whether those remains are forensic or non-forensic. If the County Coroner determines the remains are non-forensic, then they will report that finding to the DAHP, who will then take jurisdiction over those remains and report them to the appropriate cemeteries and affected Tribes. The State Physical Anthropologist will make a determination of whether the remains are Indian or non-Indian and report that finding to the affected parties. The DAHP will then handle all consultation with the affected parties as to the future preservation, excavation, and disposition of the remains.

References Cited

Abramowitz, Alan
1980 *Cultural Resources Assessment of the Carty Unit, Ridgefield Wildlife Refuge, Clark County, Washington*. Prepared by the Office of Public Archaeology, Institute for Environmental Studies, University of Washington, Seattle. Submitted to U.S. Fish and Wildlife Service, Sherwood, Oregon, under contract number 14-16-0001-7917S. On file, Washington DAHP, Olympia.

Bourdeau, Alex
2004 *Geologically Complex; The Flood Plain of the Lower Columbia River, Results of Research in Support of the Wapato Portage (45CL4) Cutbank Stabilization Project. Ridgefield National Wildlife Refuge, Clark County, Washington.* U.S. Fish and Wildlife Service, Sherwood, Oregon.

Ellis, David V.
2013 *Review of Data on the Stratigraphic Context of Archaeological Deposits in Lake River, Ridgefield, Washington*. WillametteCRA technical memorandum. Prepared for Maul Foster & Alongi, Inc., Portland, Oregon

General Land Office (GLO)
1854 Plat of Township No. 4 North, Range No. 1 West, Willamette Meridian. Electronic document, http://www.blm.gov/or/landrecords/survey/ySrvy1.php, accessed, October 5, 2014.
1863 Plat of Township No. 4 North, Range No. 1 West, Willamette Meridian. Electronic document, http://www.blm.gov/or/landrecords/survey/ySrvy1.php, accessed, October 5, 2014.

Minor, Rick, and Kathryn Toepel
1985 *Archaeological Investigations at 45-CL-4, Ridgefield National Wildlife Refuge, Ridgefield, Washington.* Report No 37. Submitted to U.S. Fish and Wildlife Service, Sherwood, Oregon, under contract number FWS No. 14-16-0001-84082. On file, Washington DAHP, Olympia, Washington.

Reese, Jo, Kristen A. Fuld, Michele Punke, and Vemon J. Veysey
2013 *Archaeological Monitoring of the Port of Ridgefield's Millers' Landing Project, Cell 2 Area, Clark County, Washington*. Archaeological Investigations Northwest Report No. 3061. Submitted to the Port of Ridgefield.

Ross, Lester A., and Judy Starkey
1975 *Archaeological Survey of Lower Lake River and Bachelor Island Slough, Clark County, Washington*. Oregon Archaeological Society, Portland.

Saul, Susan
1976 National Register of Historic Places Property Photograph Forrn. Quathlapotl Village, CL4. National Park Service, Washington, D.C.

Smith, Clarence, and Robert Hudziak
1948 University of Washington Archaeological Field Form, Site Survey Form, CL4. University of Washington, Seattle.

Society for Historical Archaeology
2014 Bottle Glass/Colors. Electronic document, http://www.sha.org/bottle/colors.htm, accessed October 2, 2014.

Toulouse, Jillian Harrison
1971 Bottle Makers and Their Marks. Ed. Book. Thomas Nelson, Inc., New York.

United States Coast and Geodetic Survey (USC&GS)
1909 *United States, West Coast, Oregon Washington, Columbia River, Saint Helens to Willamette River Including Vancouver and Portland.* U.S. Coast and Geodetic Survey, Washington, D.C.

WillametteCRA
2013 A*rchaeological Monitoring of Coring Operations for the Port of Ridgefield's Lake River Industrial Site Remediation Project Letter Report No. 12-35*. Prepared for Maul Foster & Alongi, Inc., Vancouver, Oregon.
2014 *Lake River Industrial Site Archaeological Monitoring and Inadvertent Discovery Plan for the Lake River Remedial Action*. Prepared for Maul Foster & Alongi, Inc., Vancouver, Oregon.

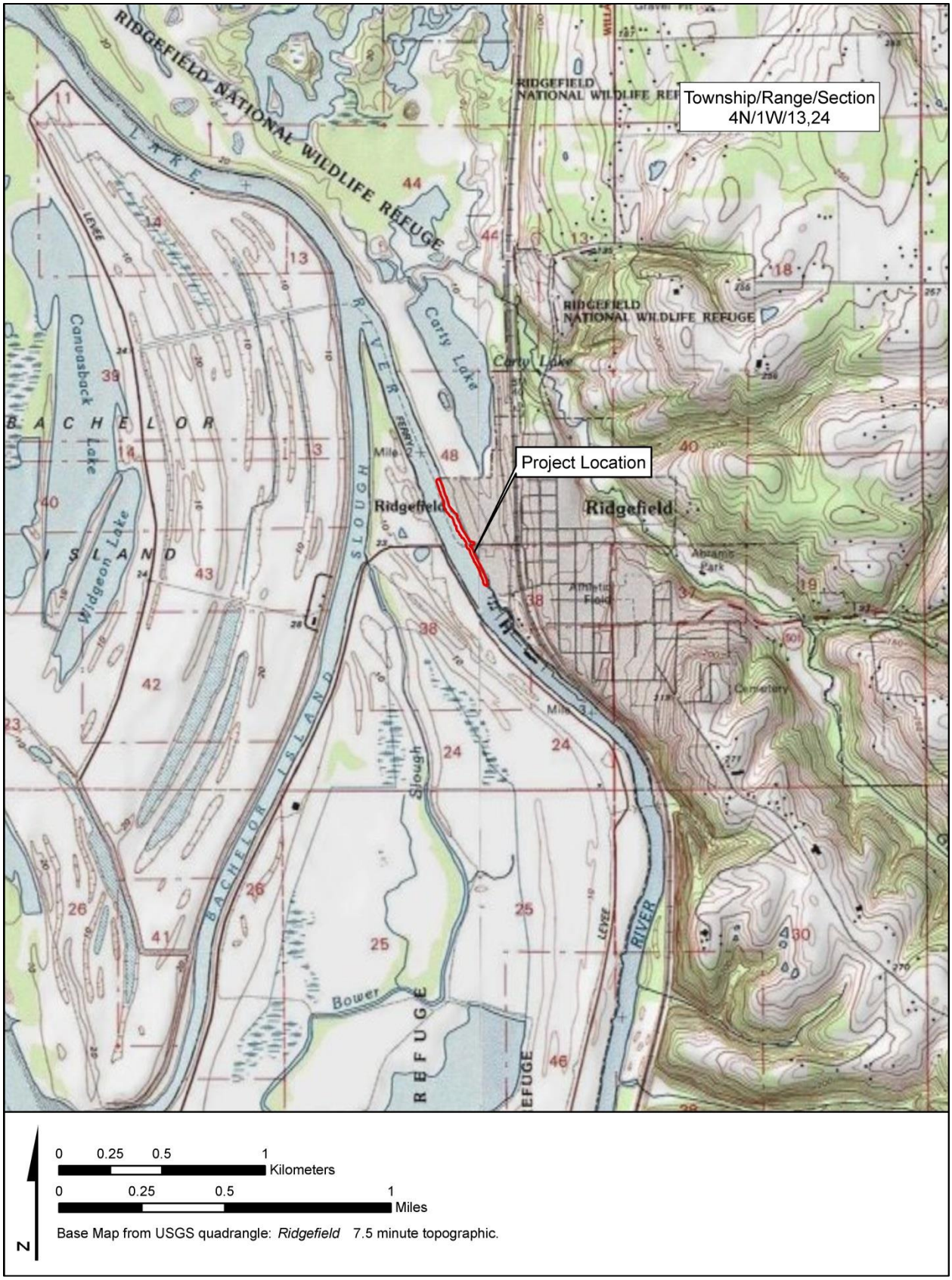


Figure 1. Project area location.

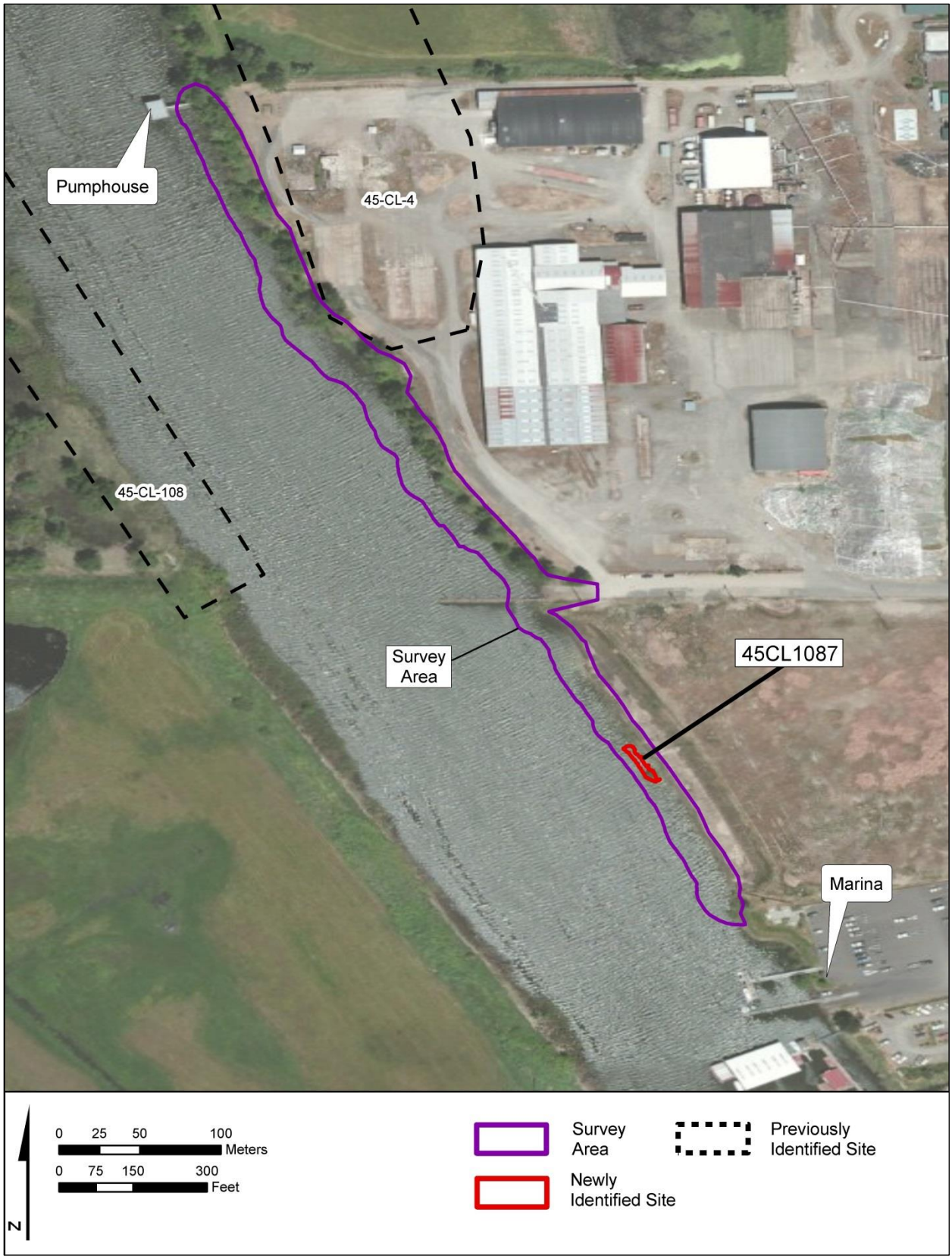


Figure 2. Close-up of site location. Note: aerial photo taken at high tide.

Figure 3. Site overview, facing north.

Figure 4. Site overview, facing south.

Figure 5. Artifact photo.

Appendix A:
Washington State Archaeological Site Form

STATE OF WASHINGTON
ARCHAEOLOGICAL SITE INVENTORY FORM

Smithsonian No.: 45CL1087
***County:** Clark

***Date:** 10/23/14 ***Compiler:** Michael Daniels **Human Remains?** ☐
Location Information Restrictions *(Yes/No/Unknown)*: **DAHP Case No.:**

SITE DESIGNATION

Site Name:
Field/ Temporary ID: 12-35-LRS-1
***Site Type(s)** *(Refer to the DAHP Survey and Inventory Guidelines Page 19)*: Historic and Precontact Components

SITE LOCATION

***USGS Quad Map Name(s):** Ridgefield, WA
***Legal Description: T**4N **R** 1W **E/W: Section(s):** 24 **Quarter Section(s):** NW, SW, NE
UTM: Zone 10 **Easting** 519330 **Northing** 5073841
Latitude: **Longitude:** **Elevation (ft/m):** 10-20 ft/ 3-6 m
Other Maps: **Type:**
Scale: **Source:**
Drainage, Major: Columbia River **Drainage, Minor:** Lake River **River Mile: 2.5**
Aspect: West **Slope:** 0-5%

***Location Description** *(General to Specific)*:
Site 12-35-LRS-1 is located west of the town of Ridgefield, Washington, on land owned by the Port of Ridgefield. The site is on the east bank of Lake River at River Mile 2.5. Lake River meets Bachelor Island Slough ca. 0.75 miles downstream and flows into the Columbia River ca. 2 miles to the northwest at the northern tip of Bachelor Island. The Ridgefield National Wildlife Refuge is ca. 0.25 miles to the north. Archaeological site 45CL4 is 300 meters to the north.

Directions** *(For Relocation Purposes):**

From the intersection of Pioneer Street and Main Ave. in the town of Ridgefield, Washington, drive north on N Main Ave for approximately 0.2 miles, then turn left onto Division Street. Follow Division Street westward to enter the Port of Ridgefield. Drive straight to the locked barrier at Lake River and park. Beyond the locked barrier, walk 20 meters (m) west towards Lake River. The site sits just south along the riverbank.

SITE DESCRIPTION

Narrative Description** *(Overall Site Observations):**

The site appears to be a redeposited surface scatter of limited FCR and historic domestic refuse items. The site is less than 300 m upstream (southeast) from 45CL4 and approximately 200 m upstream and across the river from 45CL108. The source of the FCR cannot be determined with any certainty but 45CL4 is the most likely source given its proximity to the site. Earlier investigations at 45CL4 concluded the site represents a series of small campsites occupied throughout the late prehistoric and early historic-period. Collectively, the historic artifacts at 12-35-LSR-1 span pre-1920 to at least 1964. Numerous documents provide information on use of the area in the historic period and provide evidence for use over a substantial period of time. The claim was recorded as DLC 48 in 1851 and the property remained in the Carty family until 1965 when it was purchased by the U.S. Fish and Wildlife Service. Therefore, the Carty residence is a potential source of the historic-period artifacts identified at 12-35-LRS-1. Another potential source may be the early operations at the Pacific Wood Treating Company which operated immediately to the northeast from 1964 to 1993.

Site Dimensions** *(Overall Site Dimensions):**

***Length:** 28 ***Direction:** n-s x ***Width:** 5 ***Direction:** e-w

***Method of Horizontal Measurement:** GPS

***Depth:** n/a * **Method of Vertical Measurement:** n/a

Vegetation** *(On Site):** Grasses, shrubs

Local: Grasses, shrubs **Regional:** Tsuga heterophylla zone

Landforms *(On Site)***:** On east bank of Lake River. Site is inundated during high tide.

Local: Riverbank

Water Resources *(Type)***:** Lake River **Distance:** <5 m **Permanence:** Perennial

CULTURAL MATERIALS AND FEATURES

Narrative Description** *(Specific Inventory Details):**

The archaeological survey was undertaken for the Lake River Remedial Action project. The survey area is on land owned by the Port of Ridgefield (Port). The former Pacific Wood Treating Company (PWT) operated a wood-treating facility from 1964 to 1993 at the Port's Lake River Industrial Site (LRIS). Operation of the facility led to deposits of hazardous substances in nearby Lake River and Carty Lake. The proposed cleanup action for these substances would include bank stabilization, mechanical dredging of contaminated sediments and enhanced natural recovery of Lake River. WillametteCRA conducted the shoreline survey prior to the bank stabilization portion of the remedial action. One multicomponent archaeological site was identified during the survey.

Site 12-35-LRS-1 is a multicomponent artifact scatter composed of 10 pieces of fire-cracked rock (FCR) and early to mid-twentieth century domestic refuse comprised of two temporally diagnostic bottle bases. The artifacts were observed in an area of the shoreline with naturally occurring unmodified river cobbles. The artifacts were recorded within a 5 meter wide by 28 meter long area. The FCR were scattered throughout, while the two bottle base fragments were recorded near the northern site boundary. The crew examined the adjacent cut bank for evidence of associated intact archaeological deposits (i.e., hearth feature, charcoal, midden, additional FCR) but none was found.

The two historic artifacts fall into the Domestic classification category and the Food subcategory. Both are glass bottle base fragments. One is a colorless machine-made bottle base with "4/5 quart" embossed on the side and Owens Illinois and Duraglas maker's marks on the base. The Duraglas mark has a date range between 1940 and 1964. The bottle base was manufactured at Plant 23 in Los Angeles, which operated after 1949, providing a diagnostic range of 1949-1964 for this artifact (Toulouse 1971). The second bottle base is oval-shaped with no maker's mark or other markings. It is amethyst in color, which indicates that it was manufactured prior to 1920. The amethyst color of the vessel is the result of manganese dioxide decoloration; a process that occurs to colorless glass with a manganese agent when it is exposed to UV light for an extended period of time. Manganese was commonly used as a glass additive between the 1880s until the end of World War I (Society for Historical Archaeology 2014).

***Method of Collection:** Surface collection of temporally diagnostic artifacts only (in this case, two historic bottle base fragments).

Location of Artifacts** *(Temporary/Permanent):** When the project is complete, the artifacts will be curated at the Burke Museum.

SITE AGE

Component:** Multicomponent ***Dates** *(Overall Site Age Approximation):** Precontact component - late prehistoric to early historic period; historic component – early to mid-twentieth century

***Dating Method:** Temporally diagnostic artifacts **Phase:** **Basis for Phase Designation:**

(Only those historic sites that meet the minimum National Register (36CFR60) age threshold (50 years of age or older) will be retained as historic archaeological records and assigned Smithsonian Trinomials by DAHP.)

SITE RECORDERS

Observed by: Kanani Paraso, Michael Daniels **Address:**

***Date Recorded:** 9/3/2014

Recorded by** *(Professional Archaeologist):** Kanani Paraso

***Organization:** WillametteCRA ***Organization Phone Number:** 503-281-4576

***Organization Address:** 623 SE Mill Portland OR

***Organization E-mail:** kanani@willamettecra.com

Date Revisited: **Revisited By:**

SITE HISTORY

Previous Archaeological Work** *(Done at Site):**

There have been no prior archaeological investigations at 12-35-LRS-1. However, archaeological site 45CL4 which is in the immediate vicinity of the Lake River area has been the subject of several systematic field investigations since the 1970s (Abramowitz 1980:53; Bourdeau 2004:21; Minor and Toepel 1985:4, 42; Reese et al. 2012:3, 6; Ross and Starkey 1975:21; Saul 1976). Artifacts associated with 45CL4 have included FCR, lithic debitage, complete and fragmentary projectile points, hammerstones, cobble choppers, a maul, and other tools or tool fragments as well as historic artifacts such as glass, window glass, and ceramics. Excavations in 1984 (Minor and Toepel 1985) concluded 45CL4 represents a series of small campsites occupied throughout the late prehistoric and early historic-period. Radiocarbon dates from 2012 field investigations indicated the southern portion of the site was occupied between circa 200-300 years ago (Reese et al. 2013).

LAND OWNERSHIP

***Owner:** Port of Ridgefield

***Address:** 111 W Division St., Ridgefield, WA 98642

***Tax Lot/ Parcel No:** 68314000

RESEARCH REFERENCES

***Items/Documents Used In Research** *(Specify)*:**

Abramowitz, Alan
1980 *Cultural Resources Assessment of the Carty Unit, Ridgefield Wildlife Refuge, Clark County, Washington*. Prepared by the Office of Public Archaeology, Institute for Environmental Studies, University of Washington, Seattle. Submitted to U.S. Fish and Wildlife Service, Sherwood, Oregon, under contract number 14-16-0001-7917S. On file, Washington DAHP, Olympia.

Bourdeau, Alex
2004 *Geologically Complex; The Flood Plain of the Lower Columbia River, Results of Research in Support of the Wapato Portage (45CL4) Cutbank Stabilization Project. Ridgefield National Wildlife Refuge, Clark County, Washington.* U.S. Fish and Wildlife Service, Sherwood, Oregon.

Minor, Rick, and Kathryn Toepel
1985 *Archaeological Investigations at 45-CL-4, Ridgefield National Wildlife Refuge, Ridgefield, Washington.* Report No 37. Submitted to U.S. Fish and Wildlife Service, Sherwood, Oregon, under contract number FWS No. 14-16-0001-84082. On file, Washington DAHP, Olympia, Washington.

Reese, Jo, Kristen A. Fuld, Michele Punke, and Vemon J. Veysey
2013 *Archaeological Monitoring of the Port of Ridgefield's Millers' Landing Project, Cell 2 Area, Clark County, Washington*. Archaeological Investigations Northwest Report No. 3061. Submitted to the Port of Ridgefield.

Ross, Lester A., and Judy Starkey
1975 *Archaeological Survey of Lower Lake River and Bachelor Island Slough, Clark County, Washington*. Oregon Archaeological Society, Portland.

Saul, Susan
1976 National Register of Historic Places Property Photograph Forrn. Quathlapotl Village, CL4. National Park Service, Washington, D.C.

Society for Historical Archaeology
2014 Bottle Glass/Colors. Electronic document, http://www.sha.org/bottle/colors.htm, accessed October 2, 2014.

Toulouse, Jillian Harrison
1971 Bottle Makers and Their Marks. Ed. Book. Thomas Nelson, Inc., New York.

USGS MAP

*__Quad Name(s):__ Ridgefield, WA

__*Series:__ 7.5-minute

__*Date(s):__ 2014

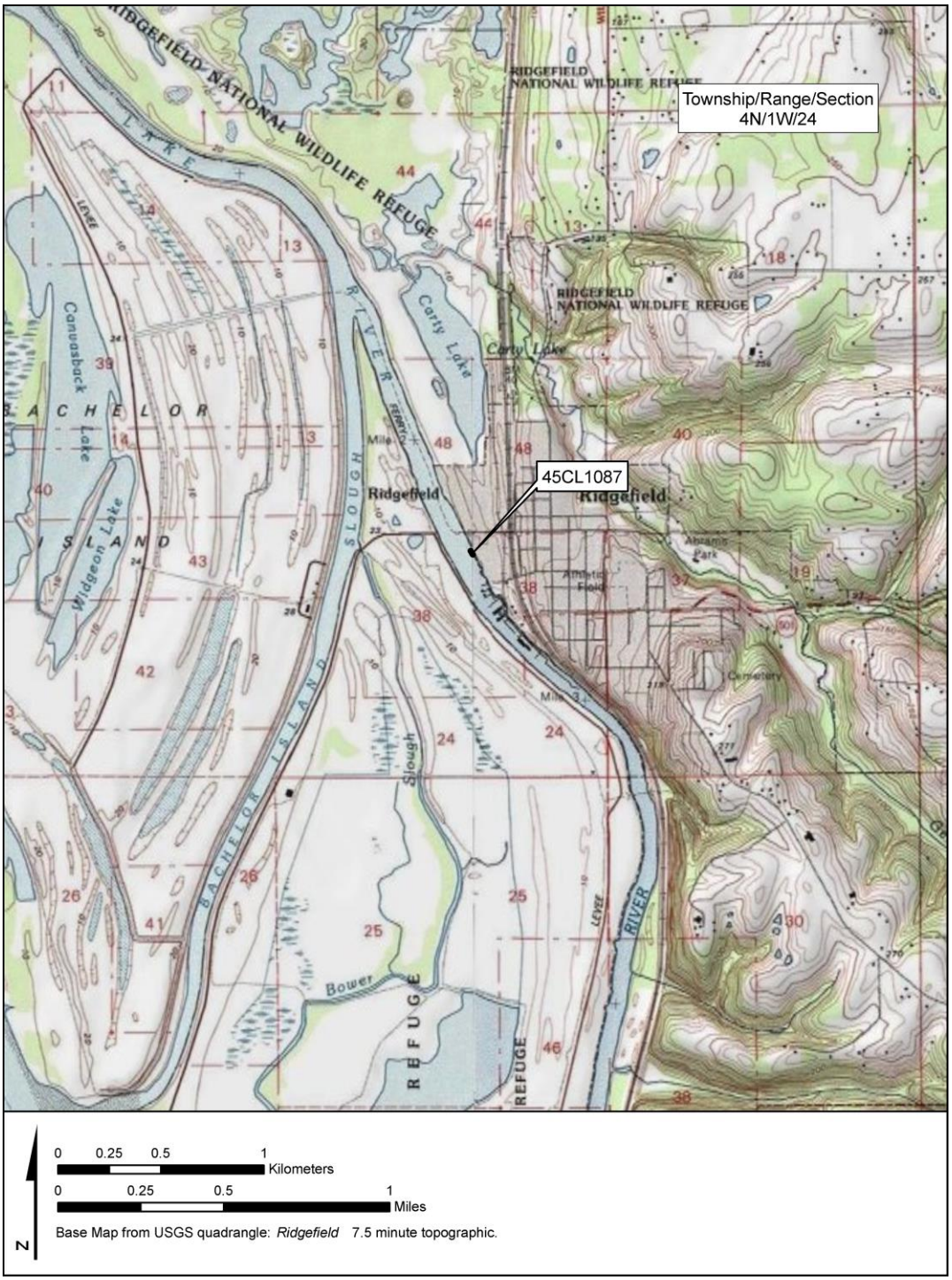


Figure 1. Site location map.

SKETCH MAP

***Sketch Map Description:**

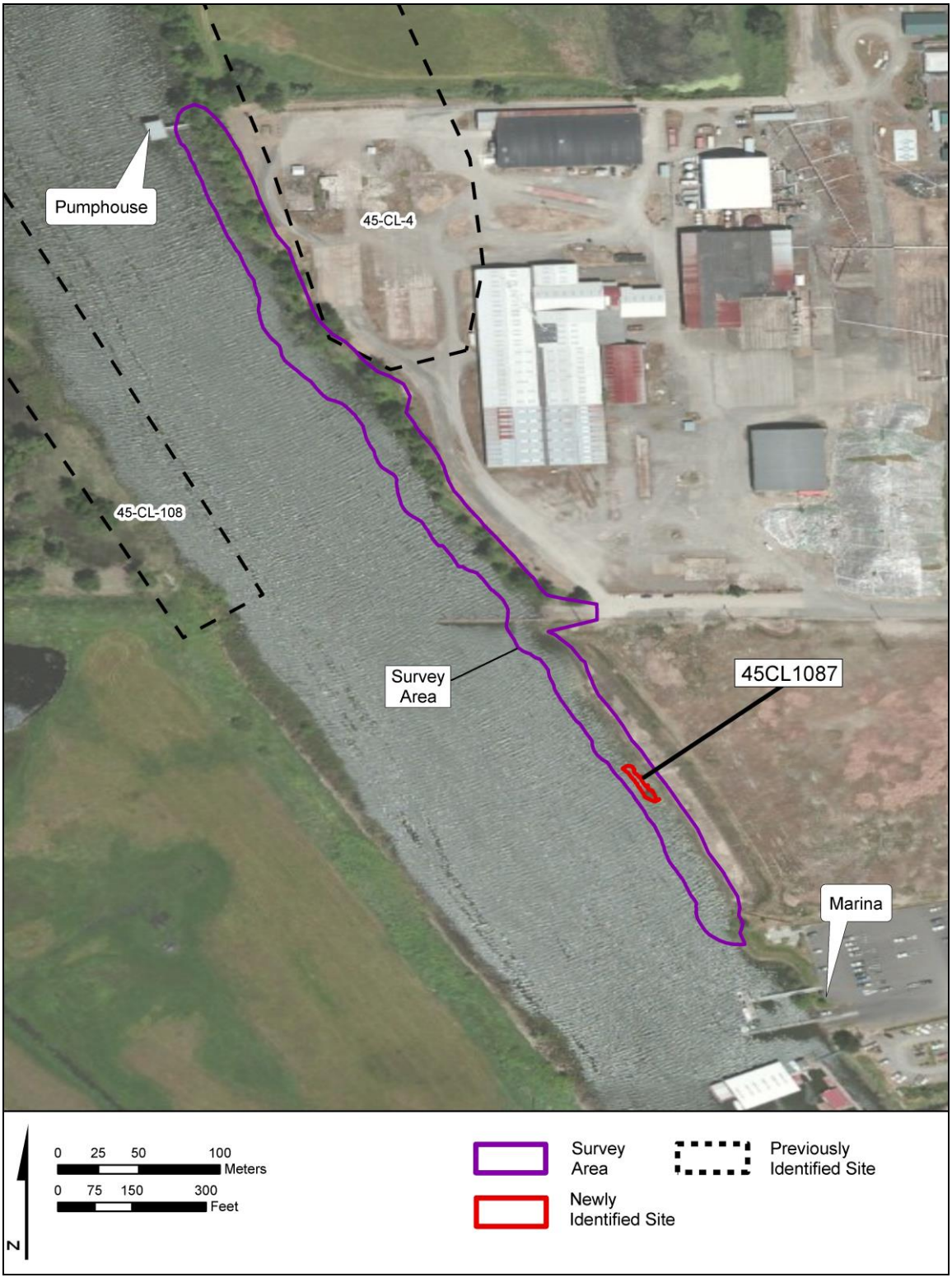


Figure 2. Site configuration map.

PHOTOGRAPH(S)

Photograph Description(s)** *(Include a representative sample of inventoried archaeological material and features, site location overviews, etc):**

Figure 3. Overview of Site 12-35-LRS-1, facing north.

Figure 4. Overview of Site 12-35-LRS-1, facing south.

Figure 5. Historic bottle base fragments, 1235LRS1/1/1 on right and 1235LRS1/1/2 on left.

CONTINUATION/ ADDENDUM SHEET

Label all additional pages by corresponding headings.

(e.g. Site Description, Site History, Research References)

Appendix B:
Artifact Catalog

WillametteCRA Project No. 12-35
Lake River Survey Historic Artifact Catalog 2014
Analyst: Breanne Taylor
Analyzed: 10/02/2014

Catalog No.	Site No.	Unit No.	Screen Size	Artifact Group	Artifact Category	Artifact Type	Artifact Description	Condition	Material	Mark
45CL1087/1/1	12-35-LRS-1	Surface	Surface Collection	Personal	Food	Container	Soda-pop Bottle	Fragment	Colorless Glass	Duraglas and Owens Illinois maker's marks.
45CL1087/1/2	12-35-LRS-1	Surface	Surface Collection	Domestic	Food	Container	Undefined	Fragment	Amethyst Glass	None

WillametteCRA Project No. 12-35
Lake River Survey Historic Artifact Catalog 2014
Analyst: Breanne Taylor
Analyzed: 10/02/2014

Catalog No.	Maker	Origin	Begin Date	End Date	Marked or Datable?	Window Glass	References	Whole Ct.	Frag Ct.	MNI
45CL1087/1/1	Duraglas	Plant 23 Los Angeles, CA	1949	1964	Yes	No	Toulouse 1971	0	1	1
45CL1087/1/2	-	-	-	1920	Yes	No	Society for Historical Archaeology 2014	0	1	1

Final Archaeological Monitoring and Inadvertent Discovery Plan for the Lake River Remedial Action

1. Introduction

The former Pacific Wood Treating Company (PWT) operated a wood-treating facility from 1964 to 1993 at the Port of Ridgefield's (Port) Lake River Industrial Site (LRIS). The LRIS location is in Sections 13 and 24, Township 4 North, Range 1 West, Willamette Meridian, in Ridgefield, Washington. Operation of the facility led to deposits of hazardous substances (i.e., wood-treating-related chemicals) in nearby Lake River and Carty Lake. The proposed cleanup action for these substances would include mechanical dredging of contaminated sediments and enhanced natural recovery in Lake River. To limit further movement of contaminated sediments into the river, the bank will be covered with a geotextile filter fabric and a fish mix rock stabilization layer.

The proposed cleanup actions involve coordination among one state and one federal agency. The Washington Department of Ecology (Ecology) is the lead State agency for the cleanup under the Washington Model Toxics Control Act. Cleanup actions in Lake River require obtaining a Section 10 permit from the U.S. Army Corps of Engineers (USACE) under the River and Harbors Act of 1899. Given the involvement of the USACE, the proposed cleanup actions are subject to the provisions of the National Historic Preservation Act (NHPA) and its implementing regulations (36CFR800). The Washington Department of Archaeology and Historic Preservation (DAHP) has the lead responsibility for ensuring compliance with State laws that protect archaeological resources and Indian graves in Washington (RCW 25-48, 27.44, 27-53, and 68.60).

The area of potential effects within the USACE's permit consideration is defined by all areas of permitted in-water activity, including upland areas where work is directly associated, integrally related, and would not occur but for the in-water authorized activity (see Figure 1).

Two precontact archaeological sites have been identified in the immediate vicinity of the Lake River area. Site 45CL108 is on the west bank of Lake River in the project area; 45CL4 is on the east bank of the river (Figures 1 and 2). Site 35CL108 is known only from exposures of archaeological deposits in the river bank and eroded material on the adjacent beach. Site 45CL4 was first recorded in 1948 (Smith and Hudziak 1948) and has been the subject several systematic field investigations since the 1970s (Abramowitz 1980:53; Bourdeau 2004:21; Minor and Toepel 1984:4, 42; Reese et al. 2012:3, 6; Ross and Starkey 1975:21; Saul 1976). Most of these studies addressed only that portion of the site that is presently situated on the Ridgefield National Wildlife Refuge. The site boundaries were extended to the south of the refuge and into the former PWT location only recently. Remedial actions at the former PWT location in late summer 2012 exposed intact archaeological deposits along the Lake River shoreline and were identified as part of 45CL4. The exposed deposits were documented; minor adjustments in the remedial actions allowed remediation to continue while protecting the deposits from further disturbance (Reese et al. 2012). Both 45CL108 and 45CL4

have been subject in the past and continue to be subject to considerable erosion, with artifacts present on the beach at both sites.

A series of cores were excavated in the Lake River channel in December 2012 to determine the boundaries of contaminated sediments in the channel. Archaeological monitoring of those cores identified artifacts in two samples. One core (LRIS-109) produced a fragment of colorless glass bottle neck. Based on the character of the threads on the neck, this item probably postdates 1930. The second core (LRIS-126) produced four pieces of fire-cracked rock (FCR) and a lithic tool fragment. The glass bottle fragment was encountered at 125 cm (38 in) below the present riverbed. The precontact artifacts in LRIS-126 were recorded at depths ranging from 80 to 125 cm (24-38 in) below the current riverbed (WillametteCRA 2013). A subsequent analysis (Ellis 2013) concluded that the precontact artifacts do not appear to have been in situ but were in sediments that probably postdate 1970 and redeposited through dredging, erosion, and river traffic. The source of the riverbed artifacts cannot be determined with any certainty but 45CL4 is the most likely source given proximity of LRIS-126 to that site.

The presence of both precontact and historic-period artifacts in the Lake River channel is not unexpected given proximity to known precontact sites (45CL4, 45CL108, and others both downriver and upriver), as well as historic-period Euroamerican use of the area. Natural erosion, erosion accelerated by commercial and recreational river traffic, and dredging by the USACE from circa 1930 to 1970 have unquestionably redeposited artifacts in the river bed. It is also possible, if not likely, that precontact artifacts are present in the channel that were deposited prior to Euroamerican settlement, and in situ deposits and/or features might also be present given that precontact archaeological sites with underwater components are known in the general area (e.g., 45CL402 on Lake River and 35MU4 on Sauvie Island). Archaeological deposits, whether in primary or secondary deposition, can be significant for both archaeologists and Tribes.

1.1. Previous Archaeology

Presented below is a summary of the available information on the two sites that have been previously documented within the Lake River area and immediate vicinity. Figures 1 and 2 provide an overview of site locations; Figure 3 presents more details on the extent of previous archaeological studies at 45CL4.

1.1.1. Site 45CL108

First recorded in 1975, 45CL108 consists of a cultural stratum of artifacts (including hammerstones, lithic debitage, and fire-cracked rock) exposed in an erosional cutbank (Duncan 1978; Starkey and Ross 1975) (see Figures 1 and 2). The only information about this site is from

surface observations, and there is no evidence of any further investigations at this site since the 1970s.

1.1.2. Site 45CL4

Site 45CL4 was first recorded in 1948, when it was reported to have been a "large site" based primarily on informant statements but was also recommended as "not worthwhile to dig further" (Smith and Hudziak 1948). No further work is known to have been undertaken at the site until the mid-1970s, when the site was revisited and proposed as the location of the Quath-la-potle ("Cathlapotle" is now the preferred spelling) village visited by Lewis and Clark in 1806. An effort was undertaken to place 45CL4 on the National Register of Historic Places because of this association (Saul 1976). Objections were raised to the attribution of the site as Cathlapotle. To better determine the character of the 45CL4 deposits, the University of Washington conducted the first professional excavations at the site. Those excavations indicated evidence of intensive occupation, and the report concluded that the site "*could*" (italics in original) represent a village and was "probably Quathlapotle" (Abramowitz 1980:50-52).

The question of whether 45CL4 was Cathlapotle thus remained unclear. In 1984, excavations conducted by Minor and Toepel determined that the site consisted of a series of small campsites occupied as early as circa AD 30-60 but with occupation intensifying after circa AD 1200 and continuing into the era of Euroamerican contact (Minor and Toepel 1985:76-80). Minor and Toepel were the first researchers to establish that 45CL4 is likely where members of the Lewis and Clark Expedition camped on the evening of March 29, 1806, after visiting Cathlapotle (Minor and Toepel 1985:19). Their research thus resolved that the site was not Cathlapotle. Lewis and Clark (Moulton 1991:30) described their campsite as "where the nativs [sic] make a portage of their Canoes and Wappato [sic] roots to and from a large pond at a Short distance." The "large pond" is likely to have been Carty Lake, and 45CL4 has become known as the "Wapato Portage" site (Bourdeau 2004).

No further fieldwork was undertaken at 45CL4 until 1999, when the USFWS and US Geological Survey conducted a magnetometer survey, subsurface coring, and backhoe trenching to address a proposed bank stabilization project following severe erosion in the northern site area during the 1996 winter flood. This study provided more information on the evolution of the site landscape (Bourdeau 2004).

The most recent fieldwork at 45CL4 was in 2012, when Archaeological Investigations Northwest monitored regrading of the upland portion of the PWT site. Archaeological deposits were encountered during the regrading, which led to excavation of four trenches to identify site boundaries within the upland PWT area to minimize or avoid further disturbance of the deposits. This discovery led to formal extension of the southern boundary of 45CL4, the first time the site has

been documented outside the Ridgefield National Wildlife Refuge. Radiocarbon dates from the 2012 field investigations indicated the southern portion of the site was occupied between circa 200-300 years ago (Reese et al. 2013).

Major erosion has occurred and continues to occur at 45CL4. The first formal recording of this site in 1948 characterized the site as badly affected by "much erosion by river," and an informant at the time stated that when steamers passed on the river by the site in the early 1900s artifacts would be exposed as their wakes eroded the banks (Smith and Hudziak 1948). Major erosion of site deposits has been noted in almost every subsequent visit and field study at the site (Abramowitz 1980:53; Bourdeau 2004:21; Minor and Toepel 1984:4, 42; Reese et al. 2012:3, 6; Ross and Starkey 1975:21; Saul 1976). Artifacts observed on the beach over the past 64 years have included fire-cracked rock, lithic debitage, complete and fragmentary projectile points, hammerstones, cobble choppers, a maul, and other tools or tool fragments.

There appears to be some confusion regarding the possible presence of burials at 45CL4. There are informant reports of burials at the nearby site of 45CL1(Abramowitz 1980:34; Ross and Starkey 1975:10), which has been confirmed as the location of the Cathlapotle village. There are, however, no direct references to burials at 45CL4 other than Ross and Starkey (1975:19) state that the burials at 45CL1 might be associated with 45CL4. However, this statement was based on the assumption at the time that 45CL4 was the Cathlapotle village site. The DAHP records on WISAARD list the site as a cemetery and state that burials and human remains have been reported at the site. None of the available reports, other than those cited above, make any reference to burials or remains at the site.

Site 45CL4 is listed on the National Register of Historic Places as a contributing resource in the Vancouver Lakes Archaeological District.

2. Proposed Cleanup Actions

2.1. Lake River

As noted in the introduction, the proposed cleanup actions for Lake River consist of three elements:

1. Removal of contaminated sediments in the Lake River channel along the eastern shoreline through mechanical dredging. Proposed dredging areas are indicated in Figure 4. The vertical extent of the dredging would range from 60 to 122 cm (2-4 ft) below the river's mudline. Dredged material will be disposed of as nonhazardous material waste at a Subtitle D landfill facility.

2. Enhanced Natural Recovery (ENR). Dredged areas will be covered with approximately 1-foot of clean sand layer to manage dredging residuals. In addition, an approximately 1-foot-thick clean sand layer will be placed over all areas exceeding the cleanup level of 5 ng/kg to reduce surface concentrations and enhance natural recovery of sediment.
3. The bank will be covered with a geotextile filter fabric and fish-mix rock stabilization layer from approximately elevation +14 NGVD 29 and up to +18 NGVD 29 in some places to the slope break to the beach. These actions will reinforce the existing slopes and act as a physical barrier to the movement of underlying soil and sediment. The proposed bank-stabilization locations are shown in Figure 5.

As presently proposed, the three elements will be implemented in the order defined above: dredging will be completed before placement of the ENR cap, and the bank stabilization will follow the dredging and ENR cap placement.

Two options are currently under consideration for transport of the dredged deposits

1. Dredged sediments would be placed temporarily in scows and then transferred to an upland handling area for dewatering and then eventual truck transport to a disposal location. This option would require some improvements at the foot of Division Street along Lake River for a possible offload berth.
2. Dredged sediments would be placed on barges in Lake River and then transported to a waste disposal facility on the Columbia River. The sediments would be transferred from barges to trucks at a transload facility on the Columbia River. Trucks would transport the sediments to the nearby disposal location. Dewatering would occur during the on-water transport.

3. Archaeological Monitoring

Based on current information, the cleanup actions proposed at this time would not impact significant archaeological resources. Given the proximity of 45CL4, agencies and Tribes have requested that ground-disturbing activity that may extend into native soils be monitored by a qualified archaeologist. The monitoring will be undertaken within the framework of procedures defined below.

Given the potential for encountering additional artifacts in Lake River, agencies and Tribes have requested that ground-disturbing activity that may extend into native soils be monitored by a qualified archaeologist. Dredge locations will not be monitored; the dredge area has already been dredged multiple times and therefore is not expected to impact undisturbed sediments. Tribal monitors may monitor any ground-disturbing activity. The monitoring will be undertaken within the framework of procedures defined below.

The following procedures have been developed to address potential inadvertent discoveries of archaeological objects and sites and Indian and historic graves and human remains to ensure compliance with the relevant federal and Washington archaeological and cultural resource laws and regulations (36 CFR 800, especially 36 CFR 800.13; RCW 27.44, 27.53, and 68.60 and Washington Administrative Code [WAC] 25-48) for cleanup actions on non-federal lands.

3.1. Professional Archaeologist On-Site: Lake River Cleanup

The Port will retain the services of a professional archaeologist as defined in RCW 27.53.030(8) and who also meets the Professional Qualifications Standards of the *Secretary of the Interior's Standards and Guidelines in Archaeology and Historic Preservation*. The archaeologist will provide on-site monitoring during all activity associated with cleanup actions that would involve potential disturbance of native soils. The archaeological monitor will coordinate his or her monitoring actions with Tribal monitors who may also be present. In the event a suspected archaeological resource is discovered by persons other than a monitor (e.g., construction worker), the archaeological monitor will be notified and ground disturbing activity may be temporarily halted to allow the archaeologist to confirm and/or make a preliminary assessment of the discovery.

Artifacts associated with 45CL4 may be present on the beach within the area proposed for bank stabilization. Prior to placement of the rock stabilization, the Port will retain the services of a professional archaeologist to systematically map the distribution of artifacts on the beach within the area to be stabilized. Temporally and functionally diagnostic artifacts, sacred objects, and objects of cultural patrimony will be collected. Any archaeological artifacts collected as part of this project be curated with the rest of the collection, currently located at the Burke Museum of Natural History and Culture in Seattle, Washington.

3.2. Discovery

Upon discovery of a suspected archaeological object or other evidence of an archaeological resource, the archaeological monitor—at his/her discretion—may temporarily halt the ground-disturbing activity. The objective of this halting is to allow the archaeologist to confirm and/or make a preliminary assessment of the discovery. Precontact artifacts or possible precontact artifacts encountered during cleanup activities will be recovered and their locations or approximate locations documented in fieldnotes, maps, and photographs. Modern debris would be noted but not collected.

Should the monitoring archaeologist determine that a possible intact archaeological resource has been encountered, he or she may direct the immediate cessation of all ground-disturbing activity in the vicinity of the discovery. The monitoring archaeologist will promptly notify the USACE of

the find and the USACE will promptly notify the DAHP and appropriate Tribes of the discovery. The monitoring archaeologist will work with the Port's contractor to determine when and where work can continue. The monitoring archaeologist will consult and coordinate with the USACE and the DAHP regarding the possible significance of any finds. The USACE, in consultation with the Tribes and the DAHP, will make the decision whether any finds are significant resources. Any procedures in response to any discoveries not defined in this plan will adhere to the procedures specified in the Inadvertent Discovery Plan developed by the Regulatory Branch of the Seattle District of the USACE.

In the event that likely or confirmed human remains are encountered, the monitoring archaeologist will be responsible for immediately notifying the USACE and the Port. Pursuant to RCW 27.44.055 and 68.60.055, the Port shall immediately notify the Clark County Medical Examiner and the Clark County Sheriff's Department. All activity must cease that may cause further disturbance to those remains and the area of the find must be secured and protected from further disturbance and exposure to rain, wind, etc. The remains should not be touched, moved, or further disturbed. The USACE will be consulted throughout this process.

The County Medical Examiner will assume jurisdiction over the human skeletal remains and make a determination of whether those remains are forensic or non-forensic. If the County Coroner determines the remains are non-forensic, then they will report that finding to the DAHP, who will then take jurisdiction over those remains and report them to the appropriate cemeteries and affected Tribes. The State Physical Anthropologist will make a determination of whether the remains are Indian or non-Indian and report that finding to the affected parties including the appropriate Tribes, the USACE, and the Port. The DAHP will then handle all consultation with the affected parties as to the future preservation, excavation, and disposition of the remains.

The decision regarding the potential significance of any archaeological objects or deposits will be based on the consultation with the USACE, the DAHP, and the Tribes, who will make the final determination of significance. In general, artifacts or deposits indicative of casual loss or discard will be considered and recorded as isolated finds. Artifacts or deposits that reflect or appear to reflect patterned behavior and are or appear to be in situ, as well as any archaeological features, will be considered potentially significant and will require further consultation with the USACE, the DAHP, and the Tribes. The archaeological monitor will document all finds in his or her fieldnotes including determining the provenience of the find as precisely as possible.

4. Confidentiality

The Port shall make its best efforts, in accordance with state law, to ensure that its personnel and contractors keep the discovery of any found or suspected human remains, other cultural items, and potential historic properties confidential. Contractors and agency personnel are prohibited from contacting the media or any third party or otherwise sharing information regarding the discovery with any member of the public, and to immediately notify the Port and direct any inquiry from the media or public. Prior to any release, the Port, the USACE, and the Tribes shall concur on the amount of information, if any, to be released to the public, any third party, and the media and the procedures for such a release, to the extent permitted by law.

5. References

Abramowitz, Alan
1980 *Cultural Resources Assessment of the Carty Unit, Ridgefield Wildlife Refuge, Clark County, Washington*. Prepared by the Office of Public Archaeology, Institute for Environmental Studies, University of Washington, Seattle. Submitted to U.S. Fish and Wildlife Service, Portland, Oregon, under contract number 14-16-0001-7917S. On file, Washington DAHP, Olympia.

Bourdeau, Alex
2004 *Geologically Complex; The Flood Plain of the Lower Columbia River, Results of Research in Support of the Wapato Portage (45CL4) Cutbank Stabilization Project. Ridgefield National Wildlife Refuge, Clark County, Washington*. U.S. Fish and Wildlife Service, Sherwood, Oregon.

Duncan, Mary Ann
1978 Cultural Resource Inventory Form for Site 45-CL-108. On file, Washington DAHP, Olympia.

Ellis, David V.
2013 *Review of Data on the Stratigraphic Context of Archaeological Deposits in Lake River, Ridgefield, Washington*. WillametteCRA technical memorandum. Prepared for Maul Foster & Alongi, Inc., Portland, Oregon

Minor, Rick, and Kathryn Toepel
1984 *Archaeological Investigations at 45-CL-4, Ridgefield National Wildlife Refuge, Ridgefield, Washington*. Report No 37. Submitted to U.S. Fish and Wildlife Service, Portland, Oregon, under contract number FWS No. 14-16-0001-84082. On file, Washington DAHP, Olympia, Washington.

Moulton, Gary E. (editor).
1991 *The Journals of the Lewis and Clark Expedition*. Volume 7. University of Nebraska Press, Lincoln, Nebraska and London.

Reese, Jo, Kristen A. Fuld, Michele Punke, and Vemon J. Veysey
2013 *Archaeological Monitoring of the Port of Ridgefield's Millers' Landing Project, Cell 2 Area, Clark County, Washington*. Archaeological Investigations Northwest Report No. 3061. Submitted to the Port of Ridgefield.

Ross, Lester A., and Judy Starkey
1975 Archaeological Survey of Lower Lake River and Bachelor Island Slough, Clark County, Washington. Oregon Archaeological Society, Portland.

Saul, Susan
1976 National Register of Historic Places Property Photograph Forrn. Quathlapotl Village, CL4. National Park Service, Washington, D.C.

Smith, Clarence, and Robert Hudziak
1948 University of Washington Archaeological Field Form, Site Survey Form, CL4. University of Washington, Seattle.

WillametteCRA
2013 A*rchaeological Monitoring of Coring Operations for the Port of Ridgefield's Lake River Industrial Site Remediation Project Letter Report No. 12-35*. Prepared for Maul Foster & Alongi, Inc., Portland, Oregon.

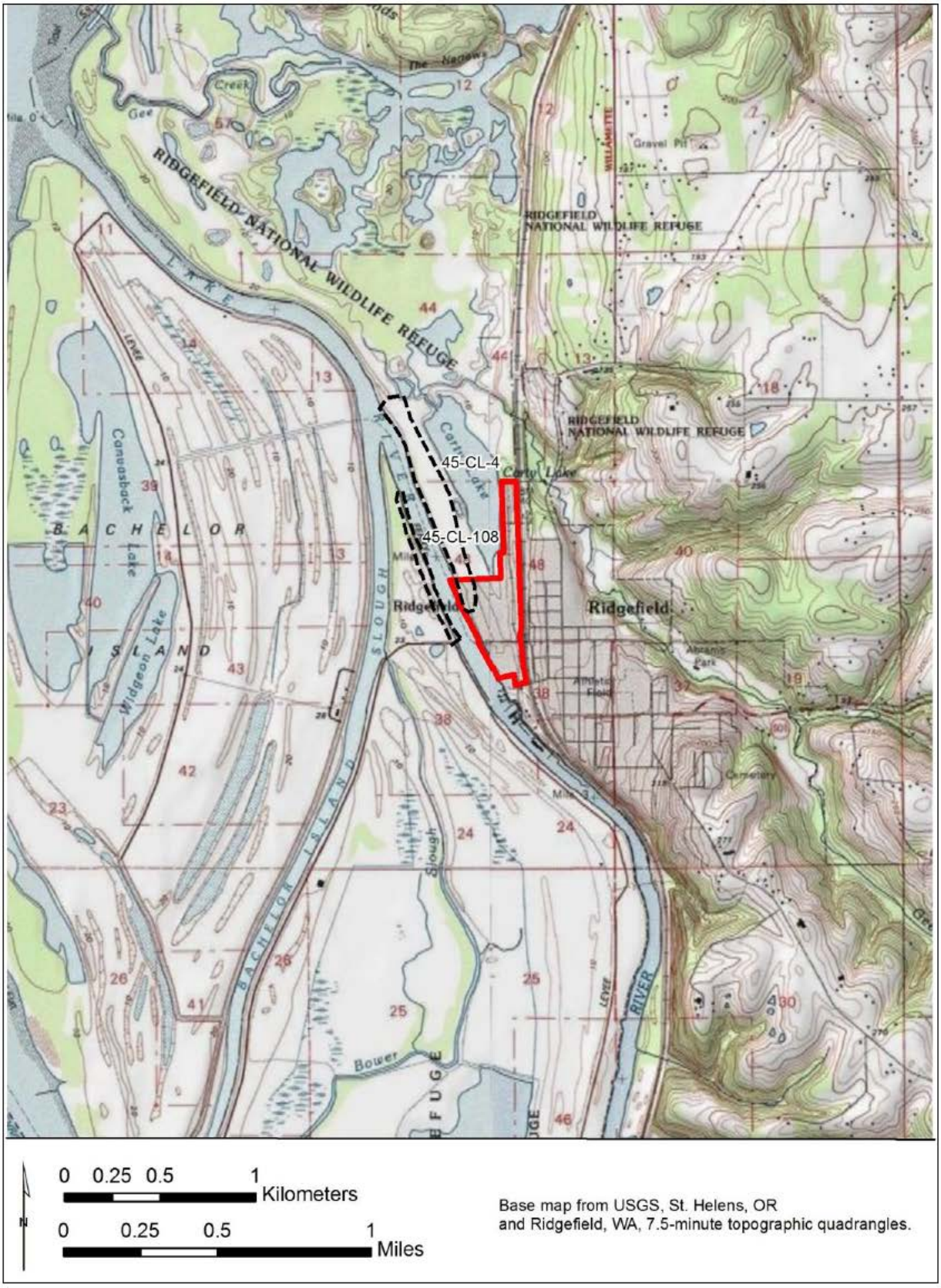


Figure 1. Location of the LRIS-Lake River project area.

Figure 2. Locations of previously recorded archaeological sites in the LRIS-Lake River area.

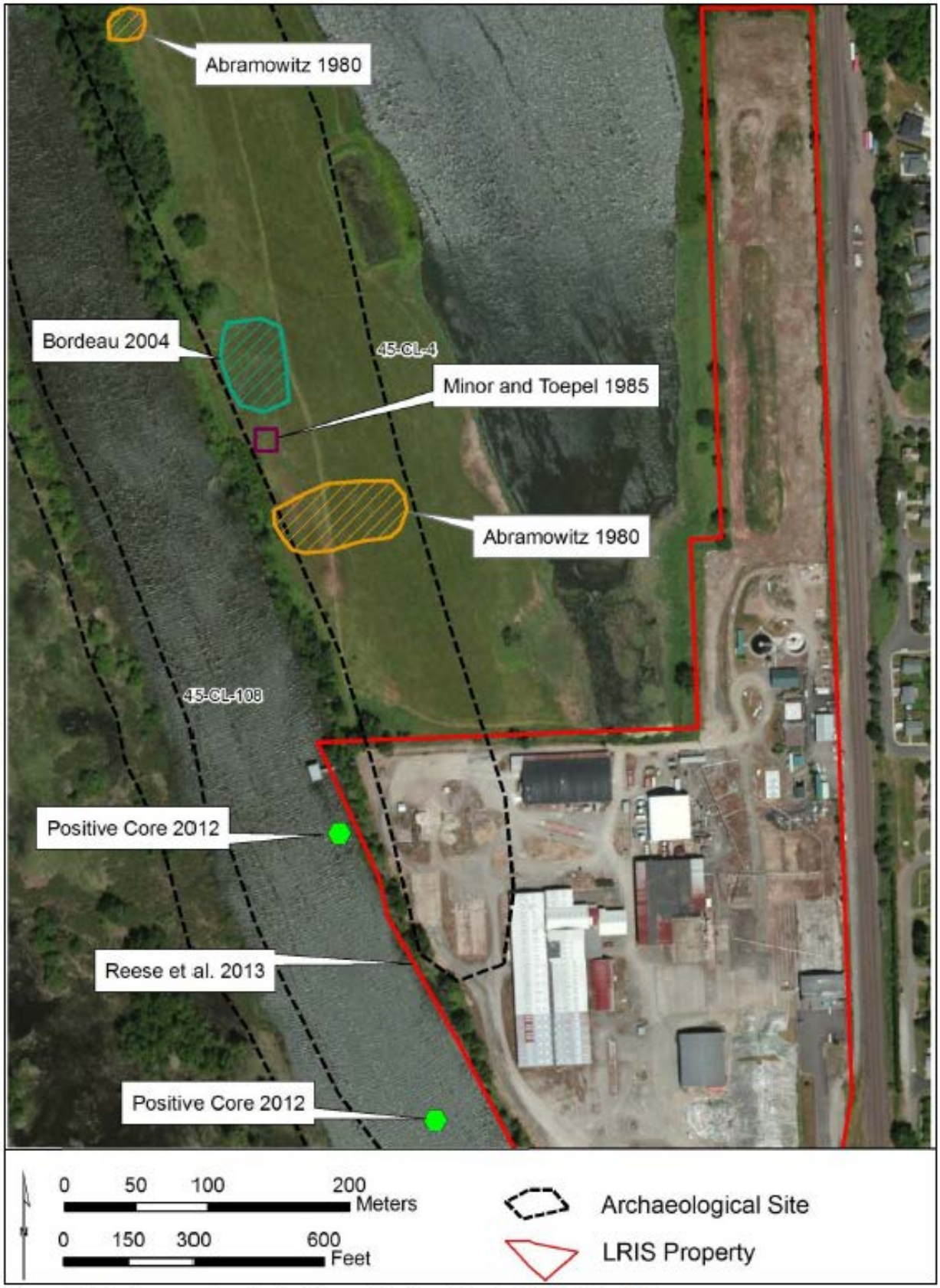


Figure 3. Previous archaeological investigations in the LRIS-Lake River area.

Figure 4. Maximum extent of the Lake River dredge area.

Figure 5. Proposed bank stabilization for the Lake River shoreline.

Attachment A

Contact Information for Inadvertent Discovery Plan

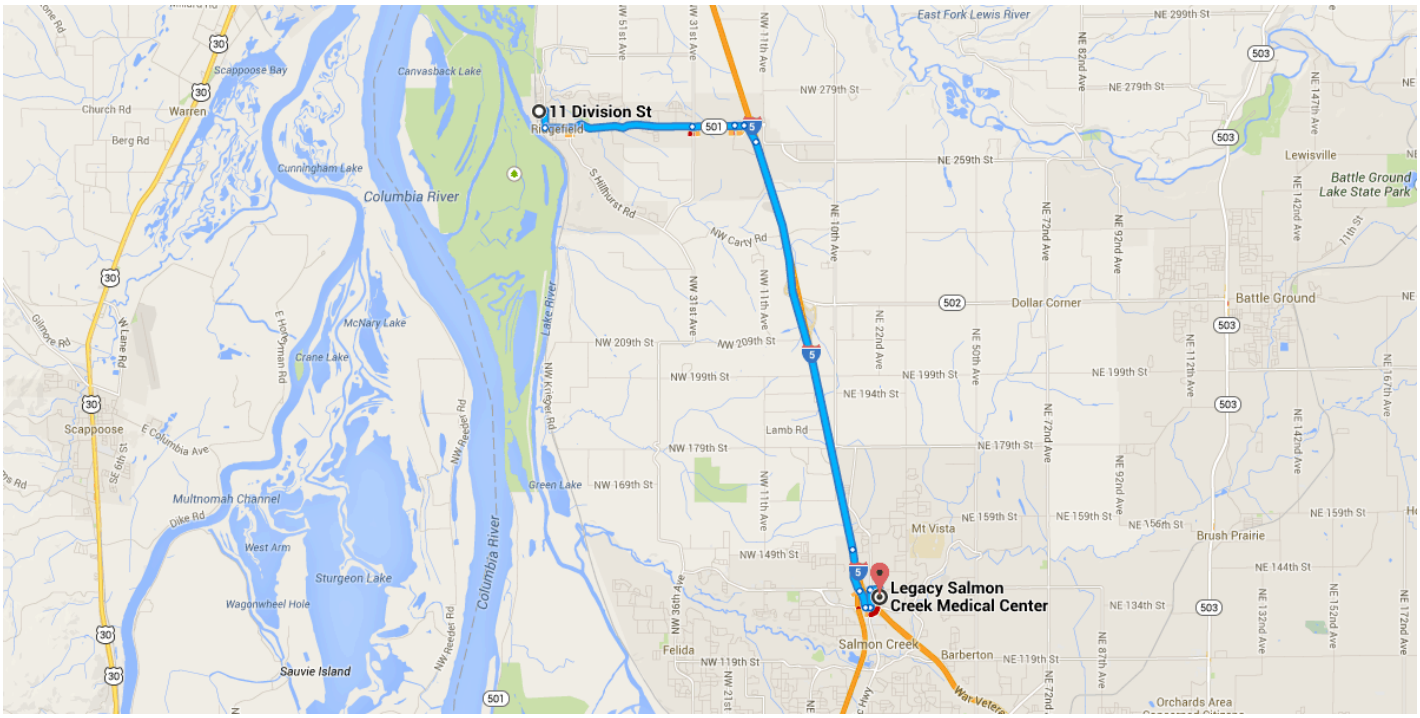
Name	Affiliation	Phone
Laurie Olin	Operations Director Port of Ridgefield	360-887-3873
Josh Elliot	Construction Engineering Manager - MFA	503-953-6067
Connor Lamb	Construction Engineering Manager - MFA	360-977-8056
Lance Lundquist	Archaeologist USACE-Seattle	206 764-6909
Rob Whitlam Guy Tasa	State Archaeologist State Physical Anthropologist DAHP	360 586-3080 360 586-3534
	Clark County Sheriff's Dept	360 397-2211
Dennis J. Wickham, M.D.	Clark County Medical Examiner	360 397-8405
Kate Valdez	Tribal Historic Preservation Officer	509 985-7596
Johnson Meninick	Cultural Resources Program Manager Manager Yakama Nation	509 685-7203
Dave Burlingame Nathan Reynolds	Cultural Resources Director Ethnoecologist Cowlitz Tribe	360 577-6962 360 577-8140
Briece Edwards	Archaeologist Grand Ronde Tribe	503 879-2084
Ray Gardner	Tribal Council Chair Chinook Indian Nation	360 875-6670

APPENDIX F

MFA HEALTH AND SAFETY PLAN

Google

Directions from 11 Division St to Legacy Salmon Creek Medical Center Drive 10.7 mi, 16 min

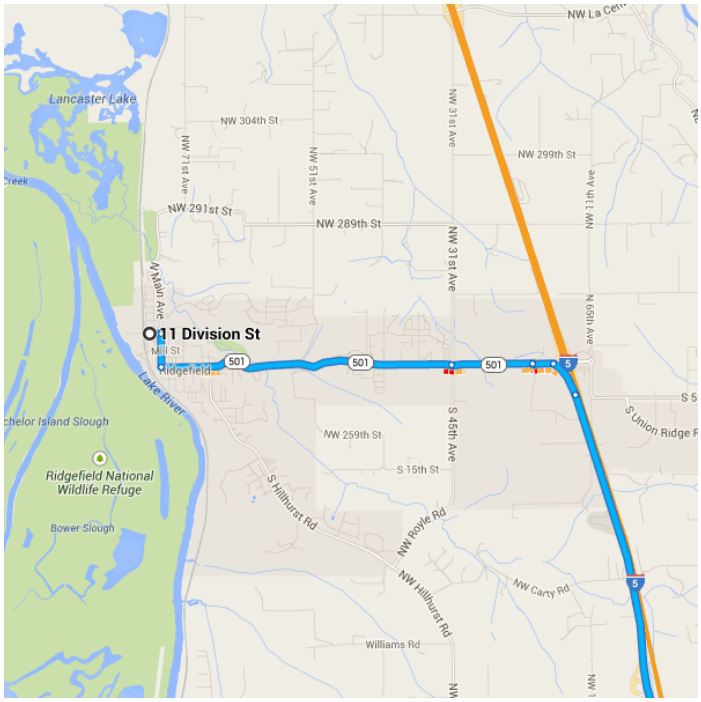


11 Division St

Ridgefield, WA 98642

Get on I-5 S from Pioneer St and NW 269th St

3.5 mi / 7 min



1. Head **east** on **Division St** toward **N 1st Ave**
   446 ft
2. Take the 2nd **right** onto **N Main Ave**
   0.2 mi
3. Take the 3rd **left** onto **Pioneer St**
   2.1 mi
4. At the traffic circle, continue straight onto **NW 269th St/Pioneer St**
   0.6 mi
5. At the traffic circle, continue straight to stay on **NW 269th St/Pioneer St**
   0.2 mi
6. Take the **Interstate 5 S** ramp to **Portland**
   0.3 mi

Continue on I-5 S to Salmon Creek. Take

exit 36 from I-205 S

6.7 mi / 6 min

7. Merge onto I-5 S

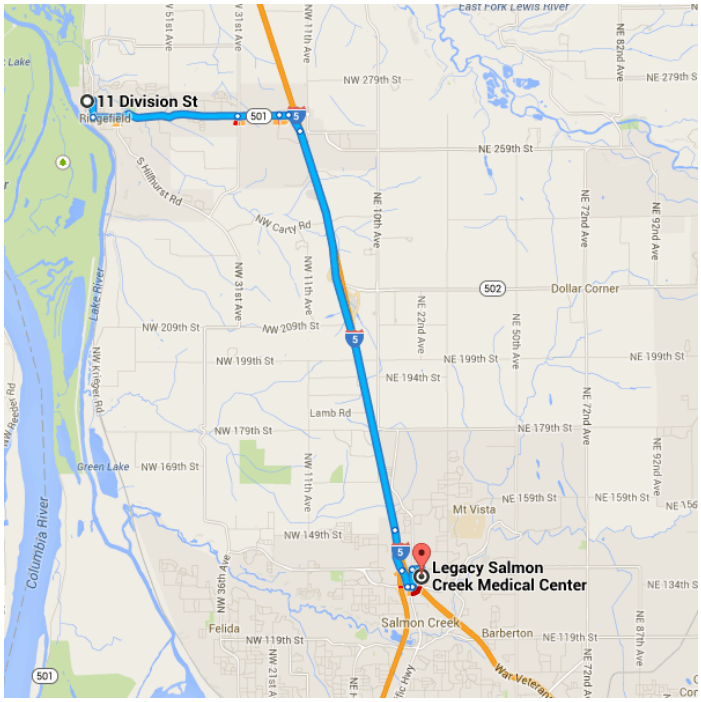
5.9 mi

8. Keep right to continue on I-205 S, follow signs for Salem/Northeast 134th Street

0.6 mi

9. Take exit 36 for NE 134th St toward Wsu/Vancouver

0.2 mi



Take NE 20th Ave to NE 139th St in Mount Vista

0.5 mi / 2 min

10. Turn left onto NE 134th St

390 ft

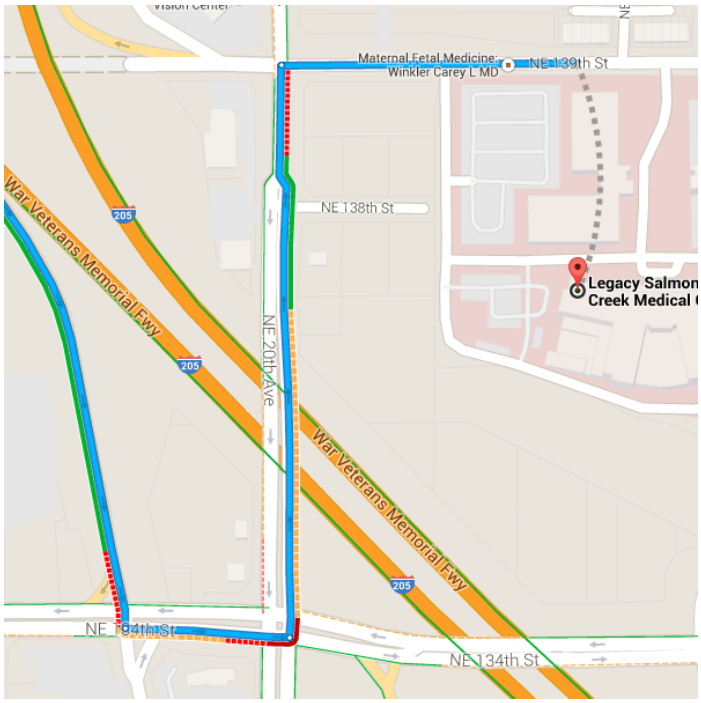
11. Turn left onto NE 20th Ave

0.3 mi

12. Take the 2nd right onto NE 139th St

Destination will be on the right

0.1 mi



Legacy Salmon Creek Medical Center

2211 NE 139th St, Vancouver, WA 98686

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

HEALTH AND SAFETY PLAN

LAKE RIVER SEDIMENT REMEDY
111 W DIVISION STREET
RIDGEFIELD, WASHINGTON

Prepared for
PORT OF RIDGEFIELD
December 19, 2014
Project No. 9003.01.40

Prepared by
Maul Foster & Alongi, Inc.
400 E Mill Plain Blvd., Suite 400, Vancouver WA 98660

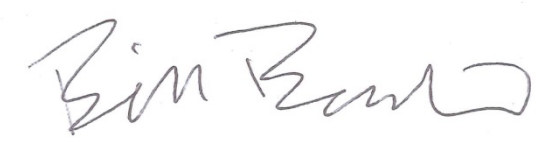
MAUL
FOSTER
ALONGI

HEALTH AND SAFETY PLAN

LAKE RIVER SEDIMENT REMEDY
111 W DIVISION STREET
RIDGEFIELD, WASHINGTON

The material and data in this report were prepared under the supervision and direction of the undersigned.

MAUL FOSTER & ALONGI, INC.



Bill Beadie, CIH
Health and Safety Coordinator
Principal Industrial Hygienist

Madi Novak
Project Manager
Senior Environmental Scientist

CONTENTS

CONTENTS (CONTINUED)

ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
COPC	chemical of potential concern
ENR	Enhanced natural recovery
FID	flame-ionized detector
HASP	health and safety plan
HSC	health and safety coordinator
JHA	job hazard analysis
MFA	Maul Foster & Alongi, Inc.
PFD	personal flotation device
PID	photoionization detector
PPE	personal protective equipment
the Site	Lake River Industrial Site
SSO	Site safety officer
USCG	United States Coast Guard
WAC	Washington Administrative Code

1 NEAREST HOSPITAL/EMERGENCY MEDICAL CENTER

1.1 Nearest Hospital

Legacy Salmon Creek
2211 NE 139th Street
Vancouver, Washington

Phone: (360) 487-4000

Distance: 10.7 miles
Travel Time: 16 minutes

1.2 Route to Hospital from Site

See map on first page of this document

1.2.1 Driving Directions to Hospital from Site

1. Head **EAST** on **Division St**. toward **N. 1st Ave**.
2. Take second **RIGHT** onto **N Main Ave**.
3. Turn **LEFT** at **Pioneer St./WA-501.**
4. At the traffic circles, continue **STRAIGHT** on **Pioneer St./WA-501.**
5. Turn **RIGHT** to merge onto **I-5 South.**
6. Take exit **7** for **I-205 South** toward **Salem/WA-14/I-84.**
7. Take exit **36** for **NE 134th St**. toward **WSU Vancouver.**
8. Turn **LEFT** onto **NE 134th St.**
9. Turn **LEFT** onto **NE 20th AVE**
10. Take the second **RIGHT** onto **NE 139th St.** and **arrive at Legacy Salmon Creek Hospital.**

1.3 Emergency Phone Numbers

Ambulance, Police, Fire	**Dial 911**
Josh Elliott Project Engineer	Phone: (503) 501-5236 Cell: (503) 953-6067
Connor Lamb Project Engineer	Phone: (503) 501-5213 Cell: (360) 977-8056
Bill Beadie Health and Safety Coordinator	Phone: (503) 501-5237 Cell: (503) 740-6847
Port Office	Phone: (360) 887-3873

2 PLAN SUMMARY

This health and safety plan (HASP) was developed to describe the procedures and practices necessary to protect the health and safety of Maul Foster & Alongi, Inc. (MFA) employees providing construction oversight of bank and in-water sediment remedial action activities at the Port of Ridgefield's Lake River Industrial Site (the Site). The goals of this remedial action include removing sediment contaminated with dioxins and other collocated chemicals (pentachlorophenol, m&p cresol, and polycyclic aromatic hydrocarbons) to the extent feasible, placing enhanced natural recovery (ENR) sand, and stabilizing the Site's bank. The removal of contaminated sediment will be conducted using precision mechanical dredging followed by placement of clean ENR sand. Dredged material will be disposed of as nonhazardous material waste at a Subtitle D landfill facility.

Other employers, including contractors and subcontractors, are expected to develop and implement their own HASPs to manage the health and safety of their personnel.

MFA personnel conducting activities at the Site are responsible for understanding and adhering to this HASP. Before beginning fieldwork, a Site safety officer (SSO) who is familiar with health and safety procedures and the Site will be designated by the on-site personnel. Safety deficiencies should be immediately communicated to the SSO, and if necessary, to the health and safety coordinator (HSC).

All contractors and subcontractors have the primary responsibility for the safety of their own personnel on the Site. All personnel on the Site have "stop work" authority if they observe conditions that they believe create an imminent danger.

If MFA employees work on the Site longer than one year, this HASP will be reviewed at least annually. The plan will be updated as necessary to ensure it reflects the known hazards, conditions, and requirements associated with the Site.

MFA personnel who will be working on Site are required to read and understand this HASP. MFA personnel entering the work area must sign the Personnel Acknowledgment Sheet (Section 16), certifying that they have read and understand this HASP and agree to abide by it.

3 KEY PROJECT PERSONNEL

Name	Responsibility
Steve Taylor	Project Director
Madi Novak	Remedy Project Manager
Erik Bakkom	Construction Project Manager
Josh Elliott	Project Engineer
Connor Lamb	Project Engineer
Bill Beadie	Health and Safety Coordinator

4 SITE DESCRIPTION AND BACKGROUND

4.1 Type of Site

Lake River is a tidally-influenced 11-mile-long side channel of the Columbia River. It lies within the lower Columbia River west of Ridgefield, Washington, near the confluence of the Columbia River and the Lewis River. During the summer of 2014, the perimeter of the upland work area will be established using barriers, fencing, and other markers to prevent disturbance of the adjacent clean soil cap, as well as to provide a relatively immobile and visible demarcation of the sediment-handling area.

4.2 Building/Structures

Known in-water structures in the project area include wooden piles, two wooden rails previously used to offload treated wood to barges, remnants of two treated-wood bulkheads, the Port's pump house, a concrete boat launch ramp with a boarding float and transient tie-up, two "no-wake" buoys, and the City's wastewater treatment plant outfall pipe. These are identified on the existing conditions and targeted debris removal plans as structures to be protected or demolished.

4.3 Topography

In the remedial action area, Lake River is approximately 300 feet wide. Depth in the remedial action area varies with slopes from the riverbank to the channel; during the anticipated fall/winter work window (i.e., during typical high-water events), depths range from less than 10 feet near shore to more than 25 feet deep at the extent of the work area in the channel. Generally, steep banks occur on both sides of Lake River, and there is no emergent vegetation. Armoring and vegetation dominate Lake River's western shoreline.

4.4 General Geologic/Hydrologic Setting

Lake River is slow-moving because there are no significant inputs to Vancouver Lake; primary flow is associated with tidal fluctuation and with surges caused by cargo ship traffic on the Columbia. Its width varies from approximately 100 feet to over 300 feet, and its maximum depth typically averages no more than 10 feet along the entire length.

4.5 Site Status

Currently, Lake River is frequented by recreationists and is habitat to aquatic animals, including waterbirds such as the great blue heron, and aquatic mammals such as the river otter. Because Lake River is a tributary of the lower Columbia River, special-status anadromous fish (such as salmonids and eulachon) may be present at certain times of year; however, migration of listed species (i.e., listed as threatened or endangered) is generally expected to occur in the mainstem Columbia River.

In the immediate work area as well as in the general area around Ridgefield, Lake River is heavily used for aquatic recreation. The Port operates two public launching facilities on the Site: a public access ramp, typically used for kayak launching at the terminus of Division Street, and a recreational boat launch at the terminus of Mill Street. McCuddy's Marina operates at the upstream end of the Site. Several floating homes are moored upstream of the Site.

Various vessels (including canoes and kayaks, motorized personal water craft, and a variety of recreational power boats) use the river along this reach.

4.6 General Site History

Adjacent to Lake River, Pacific Wood Treating Co. (PWT) operated a wood-treating facility from 1964 to 1993 at the Port's approximately 40-acre Lake River Industrial Site. PWT's operations involved pressure-treating wood products with oil-based treatment solutions containing creosote, pentachlorophenol, and water-based mixtures of copper, chromium, arsenic, and/or zinc. A remedial action has been completed on the uplands portion of the property. Pathways and sources of contamination to Lake River have been removed and an upland cap has been installed.

5 HAZARD EVALUATION

5.1 Site Tasks and Operations

MFA has completed Job Hazard Analyses (JHAs) for specific tasks that are likely to be performed on the Site by MFA employees. These JHAs are provided in Appendix A. The following list generally summarizes planned tasks and operations.

- General work near heavy equipment
- Working over water from boats and/or docks
- Working over water on barges

The control measures that field personnel must use to eliminate or minimize these hazards, such as personal protective equipment (PPE) and decontamination procedures, are detailed in the JHAs and subsequent sections of this plan.

5.2 Chemical Hazard Evaluation

Chemicals of potential concern (COPCs) and detected concentrations on the Site are summarized in Appendix B.

The presence of chemical hazards is limited to the sediment and uncapped soil within the work zone. These hazards are not anticipated to cause harm unless sediment from the work zone is physically handled.

5.3 Physical Hazards

The specific physical hazards and associated controls for work on the Site are described in the attached JHAs, included as Appendix A.

6 HEALTH AND SAFETY TRAINING

MFA personnel working on Site and who could be exposed to COPCs will have completed training consistent with the Hazardous Waste Operations and Emergency Response requirements in 29 Code of Federal Regulations (CFR) 1910.120(e). The training will include:

- Identity of Site safety and health personnel
- Safety and health hazards identified on the Site

- Proper use of required PPE
- Safe work practices required on the Site, e.g., fall protection, confined space entry procedures, hot work permits, general safety rules, etc.
- Safe use of engineering controls and equipment on the Site
- Medical surveillance requirements including the recognition of signs and symptoms that might indicate overexposure to hazards, and
- The Site emergency response plan/spill containment plan

MFA boat operators will complete training and receive a Washington State boater education card provided by the Washington State Parks and Recreation Commission.

The HSC will oversee training for Site personnel. Training records, including an outline, sign-offs, and competency records, will be maintained by the HSC.

7 SAFETY EQUIPMENT

7.1 Personal Protective Equipment

PPE must be worn by individuals on the Site to protect against physical hazards. Required PPE on the Site is modified Level D, which consists of:

- High-visibility vest
- Work boots
- Safety glasses with side shields
- Nitrile gloves or equivalent when handling known or potentially impacted media
- Work gloves if handling materials that have potentially sharp edges, protrusions, or splinters

Additional PPE may be necessary when working over water, or for specific tasks with additional hazards. The SSO will be responsible for designating additional PPE for specific tasks. Depending on the activity, additional PPE may include:

- Personal floatation device (PFD)
- Marine safety whistle (must operate when wet)
- Personal rescue strobe light (water-activated)

- Hearing protection (during high-noise tasks)
- Type 1 hard hat

Additional PPE may be required if workers discover unexpected contamination. Characteristics of unexpected contamination could include unusual odors, discolored media, a visible sheen, etc. The SSO and, if necessary, the HSC will be contacted as soon as possible after the discovery of unexpected contamination, and the SSO and or the HSC will determine the need for additional controls and/or training.

PPE used at the Site must meet the requirements of recognized consensus standards (e.g., American National Standards Institute, National Institute for Occupational Safety and Health, and United States Coast Guard [USCG]), and respiratory protection shall comply with the requirements set forth in 29 CFR 1910.134.

Project personnel are not permitted to reduce the level of specified PPE without approval from the SSO or the HSC.

7.2 Safety Equipment

The following safety equipment will be available and used as needed on the Site. The SSO will be responsible for assuring the Site safety equipment is available, properly inspected, and maintained:

- Soap and water for decontamination
- Type IV PFD with 60 feet of throw rope on each marine vessel
- First-aid kit
- Fire extinguisher
- Fluids for hydration, e.g., drinking water or sports drink
- Automated external defibirllator

7.3 Air Monitoring Equipment

Air monitoring is not anticipated for the work conducted on the Site; however, the following air monitoring equipment will be accessible if unexpected conditions (e.g. noticeable odors) arise:

- Photoionization detection (PID)
- Flame ionization detector (FID)
- Colorimetric indicator tubes (e.g., Dräger tubes)
- Confined space gas monitor (e.g., oxygen, lower explosive limit, carbon monoxide, hydrogen sulfide detector)

- Dust meter

7.4 Communications Equipment

MFA personnel will have a mobile phone in case of emergency. During overwater operations, MFA employees will use a handheld VHF marine radio to communicate with overwater personnel while monitoring for safe operation in and around the vessels. Communications during overwater operations will be conducted on pre-designated radio channels.

8 DECONTAMINATION PROCEDURES

MFA will use the following decontamination procedures when exiting the work zone or sediment handling area.

- Wash and rinse boots, outer gloves, and other equipment into containers.
- Remove outer gloves. Inspect and discard in a container labeled for disposable items if ripped or damaged.
- Remove respirator, if worn, and clean with premoistened alcohol wipes. Discard used cartridges at the frequency dictated by the SSO.
- Wash hands and face with soap and water.

9 MEDICAL SURVEILLANCE

MFA will ensure that its employees who meet the following criteria are enrolled in a medical surveillance program consistent with 29 CFR 1910.120(f):

- Employees who are, or may be exposed to hazardous substances or health hazards at or above established permissible exposure limits for 30 or more days per year
- Employees who are required to wear a respirator for 30 or more days per year

MFA employees who exhibit signs or symptoms consistent with overexposure to Site contaminants will be offered medical surveillance consistent with Washington Administrative Code (WAC) 296-843-21005.

MFA will ensure that its employees who are authorized to wear respirators are medically evaluated consistent with the respiratory protection standard (29 CFR 1910.134). The HSC or

administrative designee (e.g. human resources manager) will maintain medical evaluation records.

10 AIR MONITORING

Air monitoring is not anticipated based on the Site conditions; however, air monitoring equipment will be accessible in case workers encounter conditions that indicate the presence of unexpected contamination, such as unusual odors, discolored media, a visible sheen, etc. If such conditions are discovered, workers will exit the area and contact the SSO. As needed, the HSC may also be contacted. This HASP will be updated to reflect any change in Site conditions before work resumes.

11 SITE CONTROL MEASURES

Access to the Site will be controlled as part of the Site preparation. Control measures may include barriers, fencing, gates, and signs limiting access to authorized personnel. A specific area for sediment handling and water treatment will also be designated using perimeter fencing. A Site map showing work zones is provided in Appendix C.

12 EMERGENCY RESPONSE / SPILL CONTAINMENT / CONFINED SPACE

MFA employees on Site will follow the emergency response, spill response, and confined space procedures described in the MFA Health and Safety Manual. Incidents will be documented on the incident report included with Appendix D.

13 PRE-ENTRY BRIEFING

MFA Site employees will conduct pre-entry briefings, e.g., tailgate meetings, before starting work on the Site and or as the scope of work changes throughout the project to assure that employees are familiar with the HASP and that the plan is being followed. Attendance and discussion topics will be documented on sign-in sheets, which will be maintained by the SSO.

14 PERIODIC EVALUATION

The HSC or designee will periodically (at least annually for ongoing Site work) evaluate the effectiveness of this HASP. Evaluations can be completed by conducting Site inspections/observations, or other equivalent methods to determine if the plan is adequate for the Site conditions and being followed by personnel. Evaluations will be documented and identified deficiencies will be reported to the HSC for prompt correction and follow-up. MFA will maintain periodic evaluation records.

15 SAFE WORK PRACTICES

The following safe work practices are provided to supplement the other information included with this HASP.

1. Eating, drinking, chewing gum or tobacco, smoking, and any practices that increase the probability of hand-to-mouth transfer and ingestion of materials are prohibited in areas with potentially contaminated materials.
2. Field personnel must wear USCG-approved personal floatation vests at all times while aboard boats.
3. Boat operators should practice using the anchor at least once as part of an orientation meeting before starting the project.
4. Subsurface work shall not be performed at any location until the area has been confirmed by a utility-locator firm to be free of underground utilities or other obstructions.
5. MFA should consider having two people present during any conversations with bystanders or members of the public. Any signs of aggression or anger should be immediately reported to the project manager.
6. Personnel must wear a high-visibility vest and follow all traffic laws when walking along the public road, e.g., Division Street. Traffic along Division Street may include large trucks and heavy equipment.
7. Personnel should safely find their way off of the water and seek shelter if lightning and/or thunder are observed.

16 ACKNOWLEDGEMENT

MFA cannot guarantee the health or safety of any person entering this Site. Because of the potentially hazardous nature of visits to active sites, it is not possible to discover, evaluate, and provide protection for all possible hazards that may be encountered. Strict adherence to the health and safety guidelines set forth herein will reduce, but not eliminate, the potential for injury and illness at this Site. The health and safety guidelines in this plan were prepared specifically for this Site and should not be used on any other site without prior evaluation by trained health and safety personnel.

MFA personnel who will work at the Site are to read, understand, and agree to comply with the specific practices and guidelines as described in this HASP regarding field safety and health hazards.

This HASP has been developed for the exclusive use of MFA personnel. MFA may make this plan available for review by contracted or subcontracted personnel for information only. This plan does not cover the activities performed by employees of any other employer on the Site. All contracted or subcontracted personnel are responsible for implementing their own health and safety program including generating and using their own plan.

I have read and I understand this HASP and all attachments, and agree to comply with the requirements described herein:

Name	Title	Date

APPENDIX A

JOB HAZARD ANALYSES

WORKING OVER WATER FROM BOATS AND DOCKS

Site-Specific Job Hazard Analysis		
JHA Number 5	**Task/Operation** Working over water from boats and docks	**Location Where Task/Operation Performed** Port of Ridgefield – Lake River
Date(s) this JHA Conducted 9/5/2014	**Employee Certifying this JHA** Mike Murray	
	Print Name: Mike Murray	**Signature**

Job Description

Employees will conduct work such as water quality sampling which may involve deployment of instruments/buoys from boats and docks. This will require occasionally working in close proximity to the barge and heavy equipment. MFA will also use a boat to transfer personnel to and from barges as well as patrolling the work zone to prevent unauthorized personnel, e.g., recreational boaters, from entering the area.

Chemical Hazards

See table of chemicals of potential concern for specific chemicals and concentrations.

Exposure to chemical hazards from site contaminants is unlikely unless personnel perform tasks that involve direct contact with contaminated materials. Tasks that involve direct contact will be evaluated with additional JHAs.

Employees could be exposed to gasoline when refueling the boat.

Biological Hazards

There is no unique source of biological hazards warranting specific controls.

Physical Hazards

Name of Physical Hazard	Source	Comments
Drowning	Water below work area	
Impact - head	Equipment on barge	Hard hat is only required in close proximity to the barge
Fire/explosion	Gasoline for the boat	

Control Measures Used

Engineering Controls: No engineering controls are specified.

Site-Specific Job Hazard Analysis
Work Practices: Any over water work that is conducted in the impact area or around heavy equipment must be coordinated with the equipment operator using pre-established methods of communication, such as VHF radio, direct eye contact, hand signals, and/or verbal communication. MFA personnel should conduct a brief inspection of the boat before use to ensure safety equipment is in place, there is adequate fuel, the equipment is working properly, e.g., testing lights and radio, and the boat appears to be in good working condition. Ensure that the boat is secure while boarding and de-boarding small boats. Avoid carrying anything aboard. Step down into the boat and load the items off the pier, or have someone hand them to you one by one. While aboard the boat, a USCG-approved personal floatation vest equipped with a whistle and water-activated light should be worn at all times. Weight should be kept toward the middle of the boat whenever possible to avoid capsizing. Waves approaching the boat should be taken on the bow whenever possible. Boats should always be operated within the boat manufacturers' weight limits. In the event that any MFA personnel fall into the water, he or she should make sure that the life vest deploys and use the whistle to seek help from personnel on the boat or on shore. The whistle will also help alert nearby boat operators who could accidentally impact someone in the water. The following safety equipment should be readily available on the boat during all operations: A USCG-approved portable fire extinguisher, visual distress-signal equipment (e.g. flares or battery-operated lights), noise-producing distress signal equipment (e.g. bell, whistle, or horn), a Type-IV throwable floatation device (e.g., ring), a first aid kit, and a secondary means of propulsion (e.g. oars or paddle). Employees must keep the boat deck clear and free of trip hazards as much as possible.
PPE: USCG-approved personal floatation vest equipped with a whistle and water-activated light, and work boots. When working near heavy equipment, personnel must also wear a hard hat, high-visibility vest, safety glasses with side shields, and hearing protection such as ear plugs or ear muffs.

WORKING OVERWATER ON BARGES

Site-Specific Job Hazard Analysis		
JHA Number 5	**Task/Operation** Working over water on barges	**Location Where Task/Operation Performed** Port of Ridgefield – Lake River
Date(s) this JHA Conducted 8/4/2014	**Employee Certifying this JHA** Connor Lamb	
	Print Name: Connor Lamb	**Signature**

Job Description

Employees will make observations in close proximity to heavy equipment, e.g., excavators, front-end loaders, and cranes on barges. The observations will typically include removal of material such as debris or sediment, placement of material, and other actions necessary to implement the project design.

MFA must communicate with Contractor before starting work to establish scheduled activities and safe work practices.

Chemical Hazards

See table of chemicals of potential concern for specific chemicals and concentrations.

Exposure to chemical hazards is unlikely unless personnel perform tasks that involve direct contact with contaminated materials, e.g., contacting contaminated surfaces of heavy equipment, contacting the sediment hopper, or cleaning sediment residue from barge surfaces. Tasks that involve direct contact with contaminated materials will be evaluated with additional JHAs.

Biological Hazards

No unique source of biological hazards warranting specific controls.

Physical Hazards

Name of Physical Hazard	Source	Comments
Drowning	Body of water where work is conducted	
Impact—body	Heavy equipment operating on the barge	
Impact—eyes	Debris	
Impact—head	Impact from overhead equipment and debris	
Excessive noise	Generators and heavy equipment	
Slips, trips, and falls	Equipment, materials, or water/oil on the barge deck	

Control Measures Used

Site-Specific Job Hazard Analysis
Engineering Controls: No engineering controls are specified.
Work Practices: MFA personnel must communicate with Contractor and conduct an orientation, i.e., barge walkthrough, before the work begins to establish the safe locations and methods for performing planned activities. The locations must allow MFA to conduct the required observations, but also be out of harm's way. Preferred locations include outside of the radius of rotating equipment, outside of the swing path of overhead loads, and outside of the path of planned travel for equipment such as loaders. (Note: the safe location is typically described as a type of area, e.g., off to the side and within the operator's field of view, and not always a discrete location that can be designated on a figure). During the pre-work meeting, MFA should establish signals or other methods, e.g., using radios, to allow MFA personnel to approach as needed to make observations. MFA should discuss any observed slip, trip, or fall hazards with Contractor before the work begins. During the work, MFA must establish eye contact with the equipment operator before approaching heavy equipment or entering the work area. Personnel should stay upwind as much as feasible and in the places designated during the pre-work meeting. MFA personnel will reduce the risk of accidents and injuries by anticipating the actions of the heavy equipment operator during the work. In the event that any MFA personnel fall into the water, he or she should make sure that the life vest deploys and use the whistle to seek help from personnel on the barge or on shore. The whistle will also help alert nearby boat operators who could accidentally impact someone in the water. The following safety equipment should be readily available on the boat during all operations: A USCG-approved portable fire extinguisher, visual distress-signal equipment (e.g. flares or battery-operated lights), noise-producing distress signal equipment (e.g. bell, whistle, or horn), and a first aid kit.
PPE: USCG-approved personal floatation vest equipped with a whistle and a water-activated light, hard hat, work boots, high-visibility clothing, e.g., vest or shirt, safety glasses with side shields, hearing protection, i.e., ear plugs or ear muffs.

APPENDIX B

CHEMICALS OF POTENTIAL CONCERN

Table 1
Chemical Hazards - Lake River Sediment

	Range in Sediment (mg/kg)							
	Low	High	OSHA PEL (TWA)	ACGIH TLV (TWA)	NIOSH IDLH	LEL (%)	IP (eV)	Other Hazard
TPH								
Gasoline-Range Organics (TPH-G)	NA	NA	NA	300 ppm	NA	1.4	NA	C, E, F, P
Diesel-Range Organics (TPH-D)	ND	14 J	NA	100 mg/m^3	NA	NA	NA	E, F, P
Residual-Range Organics (TPH-O)	ND	76 J	NA	NA	NA	NA	NA	E, F, P
PAHs								
Total PAH	ND	38.6	0.2 mg/m^3	0.2 mg/m3	80 mg/m3	0.6%	NA	F, P
Anthracene	ND	1.2	0.2 mg/m^3	0.2 mg/m3	80 mg/m3	0.6%	NA	F, P
Benzo(a)anthracene	ND	2.1	NE	NE	NE	NA	NA	C,P
Chrysene	ND	2.1	0.2 mg/m^3	0.2 mg/m^3	80 mg/m^3	NA	7.59	C,P
Fluoranthene	ND	12	NE	NE	NE	NA	NA	SC, P
Fluorene	ND	1.0	NE	NE	NE	NA	NA	
Phenanthrene	0.00019 J	7.3	0.2 mg/m^3	0.2 mg/m^3	80 mg/m^3	NA	NA	
Pyrene	ND	8.9	0.2 mg/m^3	0.2 mg/m^3	80 mg/m^3	NA	NA	P
Dioxins								
Dioxin TEQ (Toxicity Equivalent)	0.00000059	0.00091	NE	NE	NE	NA	NA	C, P
Phenols								
3-Methylphenol & 4-Methylphenol (m&p-Cresol)	ND	0.36	22 mg/m^3	20 mg/m^3	250 ppm	1.1%	8.98	C
Pentachlorophenol	ND	3.1	0.5 mg/m^3	1.5 mg/m^3	2.5 mg/m^3	NA	NA	C, P

Table 1
Chemical Hazards - Lake River Sediment

NOTES:

mg/kg = milligrams per kilogram

mg/m^3 = milligrams per cubic meter

C = carcinogen

Ce = Ceiling concentration

COR = corrosive

E = explosive

F = flammable

IDLH = immediately dangerous to life and health

IP (eV) = ionization potential

J = estimated value

LEL = lower explosive limit

NA = not available

ND = non-detect

NE = not established

P = poison

PAH = polycyclic aromatic hydrocarbon

PEL = permissible exposure level

PPM = parts per million

R = reactive

RBC = risk-based concentration

SC = suspected carcinogen

RCRA = Resource Conservation and Recovery Act

TLV = threshold limit value

TPH = total petroleum hydrocarbons

TWA = time-weighted average

VOC = volatile organic compound

IDLH values taken from http://www.cdc.gov/niosh/idlh/intridl4.html

APPENDIX C

SITE MAP

Source: Aerial photograph (2013) obtained from the National Agriculture Imagery Program (NAIP); taxlot and road data obtained from Clark County (August 2013).

Note: ENR = enhanced natural recovery

Legend

- Dredge Prism
- Fish Mix
- Clean Soil
- Gravel
- ENR Sand

Figure
Lake River Remedy Areas

Lake River Remedial Action
Port of Ridgefield
Ridgefield, Washington

0 100 200
Feet

MAUL FOSTER ALONGI
p. 971 544 2139 | www.maulfoster.com

Path: X:\9003.01 Port of Ridgefield\40\Projects\06\Lake River Remedial Design\Fig1-4_Lake River Remedy Areas.mxd
Print Date: 2/21/2014
Approved By: pweischer
Produced By: jschane
Project: 9003.01 40/06

APPENDIX D

INCIDENT REPORT FORM

MAUL FOSTER & ALONGI, INC.

HEALTH AND SAFETY INCIDENT REPORT

THIS REPORT MUST BE COMPLETED IN FULL AND SUBMITTED WITHIN 24 HOURS TO THE MFA HEALTH AND SAFETY COORDINATOR

Project Name: _____

Project Number: _____

Date of Incident: _____

Time of Incident: _____

Location: _____

_____

TYPE OF INCIDENT (Check all applicable items)

☐ Illness ☐ Fire, explosion, flash

☐ Injury ☐ Unexpected exposure

☐ Property Damage ☐ Vehicular Accident

☐ Health & Safety Infraction ☐ Electrical Shock

☐ Other (describe)

_____

DESCRIPTION OF INCIDENT (Describe what happened and the possible cause of the incident. Identify individual(s) involved, witnesses, and their affiliations. Describe emergency or corrective action taken. Attach additional sheets, drawings, or photographs as needed.)

_____

_____

_____

_____

_____

_____

_____

_____

Incident Reporter:

_____ _____ _____

Print Name Signature Date

Site Safety Officer must deliver this report to the Health & Safety Coordinator within 24 hours.

Reviewed by: _____ _____

MFA Health & Safety Coordinator Date

APPENDIX G

LAKE RIVER RIPARIAN ENHANCEMENT PLAN

REVISED LAKE RIVER RIPARIAN ENHANCEMENT PLAN

ADDENDUM TO THE JOINT AQUATIC RESOURCES PERMIT APPLICATION

LAKE RIVER REMEDIAL ACTION
111 W DIVISION STREET
RIDGEFIELD, WASHINGTON

NWS-2013-875

Prepared for
PORT OF RIDGEFIELD
January 17, 2014
Project No. 9003.01.40

MAUL FOSTER ALONGI

Prepared by
Maul Foster & Alongi, Inc.
400 E Mill Plain Blvd., Suite 400, Vancouver WA 98660

REVISED LAKE RIVER RIPARIAN ENHANCEMENT PLAN

Maul Foster & Alongi, Inc. has prepared this riparian enhancement plan as a supplement to the Lake River Remedial Action Joint Aquatic Resources Permit Application (JARPA) (Reference Number NWS-2013-875). The purpose of the remedial action is to address historical contamination in the sediments in Lake River adjacent to the former Lake River Industrial Site (LRIS) (now referred to as Miller's Landing). The remedial action was designed to create a net benefit to the environment and will involve dredging and excavation of contaminated sediment in areas exceeding remediation levels, placing clean sand to control sediment residuals and enhance the recovery of low-level contamination, and bank stabilization (see Attachment 1 to the JARPA for a more detailed project description).

Mitigation sequencing has been incorporated throughout the design process for the project, which has been overseen by the Washington State Department of Ecology (Ecology). To effectively stabilize the bank, predominantly non-native and some native vegetation will be removed or covered. Removal of native shrubs and trees will be off-set through re-vegetation of the riverbank with natives following construction. This is consistent with federal regulations specifying that compensatory mitigation is required to ensure that impacts to the aquatic environment are minimized and offset (33 CFR, Parts 325 and 332, April 10, 2008). Per the regulations, a minimum 1:1 acreage or linear foot compensation must be provided (CFR 332.3(f)). In a letter from the U.S. Army Corps of Engineers (COE) on December 31, 2013, a 2:1 mitigation ratio (based on lineal feet) was requested to account for potential temporal impacts.

The purpose of this riparian enhancement plan is to (1) demonstrate that the proposed riparian enhancement meets and exceeds the 2:1 mitigation ratio, (2) describe measures that will be taken to improve habitat quality on the riverbank, and (3) outline plans for monitoring and maintenance.

MFA initially submitted a riparian enhancement plan on November 25, 2013 and received comments and a request for a revised riparian enhancement plan from the COE on December 31, 2013. During a conversation on January 8, 2014 the approach to the riparian enhancement documented herein was selected.

1. BACKGROUND

Lake River is west of the former LRIS (now known as Miller's Landing) and the Ridgefield National Wildlife Refuge. The LRIS was used as a wood processing and shipping site between 1964 and 1993, and cleanup actions have been conducted at the LRIS since 2000. Through the completion of a remedial investigation and feasibility study conducted under an Agreed Order, it was determined that Lake River sediments are contaminated at levels that present unacceptable risk to human health and to ecological receptors. Therefore, Ecology requires remedial actions in Lake River to address legacy contamination in the remedy area (see Exhibit C1.0). The remedial action provides environmental benefit, as it addresses unacceptable risks to ecological receptors, primarily by dredging contaminated sediment and eliminating the potential for erosion of contaminated soils into the aquatic environment.

2. PLAN OVERVIEW

Miller's Landing is a former industrial site that is planned for redevelopment with a mix of uses, including commercial, office, retail, and open space. The river bank at Miller's Landing is planned for recreational use, with trails and open grassy areas, and accommodates enhancements to habitat. The riparian habitat enhancement concept for Miller's Landing is to improve the physical characteristics of the riverbank and establish a native plant community. The enhancement concept includes:

- Grading the riverbank and adding fish mix rounded rock (7-inch median) from the toe of the slope to between approximately +11 and +14 feet National Geodetic Vertical Datum of 1929 (NGVD).
- Installing native trees, shrubs and groundcover in three discrete groves (planting groves 1, 2, and 3).
- Planting native grasses on the riverbank.

The native planting areas are located on the riverbank Cell 2, kayak launch, and Cell 3 reaches (see Exhibits L1.0 and L1.1). In the Cell 2 and kayak launch reaches, the planting area generally extends from ordinary high-water mark (OHW) of +14 feet NGVD to the gravel trail and includes native grasses and two discrete groves; the landward extent of the planting area generally follows the top of the riverbank. The planting area in the Cell 3 reach is comprised of one discrete grove; note native grasses were previously planted in the Cell 3 reach.

3. COMPENSATORY MITIGATION

The riverbank will be re-graded and fish mix rounded rock will be installed from the toe of the slope to between approximately +11 and +14 feet NGVD. These bank stabilization elements were designed to account for Lake River wave action and to reduce soil erosion. Construction includes the removal or covering of vegetation. Existing vegetation is primarily non-native, however some natives are present. Removal of native vegetation requires compensatory mitigation and mitigation will be achieved with native vegetation plantings.

A survey of existing native tree and shrub vegetation was completed by MFA ecologists on January 10, 2014. Conditions were overcast, with some light rain. Temperatures were in the mid-40s (Fahrenheit). Native vegetation was identified and logged with a differential global positioning system along the entire shoreline between the water elevation (approximately +7 feet NGVD) and jurisdictional OHW (+14 NGVD) (see the Figure). A photo array showing shoreline vegetation and associated descriptions are provided in the Appendix.

Shrubs, groundcover, and some trees are generally present up to +11 NGVD. This vegetation is predominantly comprised of non-native California false indigo (*Amorpha californica*), reed canary grass (*Phalaris arundinacea*), Himalayan blackberry (*Rubus armeniacus*), and low growing groundcover. Above +11 NGVD, grasses[1] and non-native weeds (e.g., Queen Anne's lace) are dominant.

[1] Grasses are non-native in Cell 2. In Cell 3, native grasses were recently planted.

A total of 148 lineal feet of native tree and shrub vegetation was measured along the approximately 1,840 feet long shoreline (see the Figure). Some native herbaceous forbs (knotweed [*Polygonum sp.*] less than 3 feet tall) identified as nuisance species (Portland Bureau of Planning and Sustainability Portland Plant List) were not included in the evaluation. Note that native vegetation was generally isolated and surrounded by non-native vegetation.[2] Natives identified include Oregon ash, cottonwood species, and willow species; leaves were generally absent and twigs were collected to support identification.

The proposed native tree and shrub plantings (planting groves 1, 2, and 3) span approximately 500 lineal feet. The proposed tree and shrub plantings exceed the 148 lineal feet of existing native vegetation to be removed (3.4:1 ratio). The proposed plantings will therefore provide the required compensation (2:1 mitigation ratio based on lineal feet) for unavoidable impacts to aquatic resources (CFR 332.3(f)).

4. RIPARIAN AREA GOALS, OBJECTIVES, AND PERFORMANCE STANDARDS

Goal: Enhance habitat functions and values of the riverbank.

Objective 1: Reduce and control non-native vegetation.

Performance Standard 1: During all monitoring periods, non-native, invasive plant species will not exceed 20 percent aerial cover in the planting areas.

Objective 2: Improve physical structure of riverbank habitat.

Performance Standard 2: Fish mix rounded rock material (7-inch median) will cover 100% of the riverbank from the toe of the slope to a minimum elevation between +11 feet and +14 NGVD. Turf reinforcement mat (TRM) will be in place from the fish mix extent to the top of the bank (approximately +22 NGVD).

Objective 3: Enhance the riverbank plant community.

Performance Standard 3.1: Planted, native tree and shrub species will achieve 100 percent survival during the first and second years after the site is planted. If dead plantings are replaced, the performance standard will be met.

Performance Standard 3.2: During the third through fifth years after planting, native tree and shrub species will achieve 80 percent survival. If dead plantings are replaced, the performance standard will be met.

Alternatively:

Performance Standard 3.2: Native tree and shrub species will provide 15 percent aerial cover in the third year and 25 percent aerial cover in the fifth year in the planting areas.

[2] Non-native vegetation was generally present and dense along the entire shoreline, with the exception of the Division St. kayak launch area (no vegetation present).

5. GRADING AND PLANTING PLAN

5.1. GRADING

The existing bank below +11 feet NGVD will be stabilized with a minimum 2-foot-thick layer of fish mix rounded rock (7-inch median) from the toe of the bank slope to a minimum elevation of approximately +11 feet NGVD. Fish mix will be placed on a filter layer consisting of filter gravel and/or filter fabric to prevent erosion of underlying bank soils. Fish mix will be placed at no greater than a 4H:1V slope. Above 11 feet NGVD, fish mix will be transitioned at a less-than-2-foot thickness to the existing clean soil cap grades. In the Cell 2 archaeological reach, the minimum 2-foot-thick layer of fish mix will extend farther up the bank to stabilize soils that, because of the presence of archaeological artifacts, were not regraded during the upland cleanup.

The fish mix is required to prevent further erosion of the bank and subsequent potential release of contaminants. Additionally, the fish mix will serve to protect known archaeological artifacts in the Lake River bank. Existing bank debris either will be removed prior to placement of fish mix or will be entirely covered by the fish mix.

TRM will be placed and seeded from the top of the bank down to the fish mix extents. The planted TRM will provide a reinforced, vegetated system to minimize erosion of the clean soil cap during high-water events.

5.2. PLANT LIST

Native plants and grasses will be installed on the riverbank between OHW (+14 feet NGVD) and the gravel trail in the Cell 2 north, Cell 2 south, and kayak launch reaches (see Exhibits L1.0 and L1.1). As described above, fish mix will extend farther up the bank (above OHW) in the Cell 2 archaeological reach; native plants will be installed above the fish mix extents in this reach and a discrete grove extends landward of the gravel trail. In addition, a discrete native tree, shrub, and groundcover grove will be planted in the Cell 3 reach (see Exhibit L1.1). The planting plan has been designed to cluster native trees and shrubs in three groves to provide habitat structural diversity while protecting scenic views. The planting groves span approximately 500 lineal feet. The open areas between the clustered trees are planted or will be planted with native grasses. The total native plant area will extend approximately 1,750 feet and be approximately 2.7 acres.

The plants specified for the mitigation site are intended to provide diversity in each stratum and will provide cover and habitat in both the short and long terms. The proposed plant list includes seven species of native trees and seven species of native shrubs, along with variety of native grasses, legumes, and wildflowers.

Table Planting List

Common Name	Scientific Name	Size*	Qty	Spacing
Trees				
Douglas Fir	*Pseudotsuga menziessii*	5 gal	4	Per planting plan
Western Red Cedar	*Thuja plicata*	5 gal	4	Per planting plan
Oregon Ash	*Fraxinus latifolia*	3 gal	4	Per planting plan
Pacific Crabapple	*Malus fusca*	3 gal	7	20'–0", o.c.
Pacific Willow	*Salix lasiandra*	1 gal	8	20'–0", o.c.
Scouler's Willow	*Salix scouleriana*	1 gal	4	15'–0", o.c.
Chokecherry	*Prunus virginiana*	3 gal	13	15'–0", o.c.
Shrubs				
Snowberry	*Symphoricarpos albus*	1 gal	58	3'–0", o.c.
Nootka Rose	*Rosa nutkana*	1 gal	62	3'–0", o.c.
Evergreen Huckleberry	*Vaccinium ovatum*	1 gal	41	3'–0", o.c.
Red Flowering Currant	*Ribes sanquineum*	1 gal	61	4'–0", o.c.
Douglas' Spiraea	*Spiraea douglasii*	1 gal	68	4'–0", o.c.
Red-Osier Dogwood	*Cornus stolonifera*	1 gal	51	5'–0", o.c.
Ninebark	*Physocarpus capitatus*	1 gal	33	6'–0", o.c.

Common Name	Examples	Type
Groundcover		
Low-Growing Native Grasses and Wildflowers	Ex: Yarrow and Red Fescue	Seed
Low-Growing Native Grasses	Ex: Buffalo Grass and Red Fescue	Seed
Taller Native Grasses	Ex: Tufted Hairgrass and Blue Wildrye	Seed

*If specified sizes are not available, bare root stock may be substituted.

5.3. PLANTING SPECIFICATIONS

Plants will be installed according to the following specifications.

Planting

- Plant the site with native species according to the planting list.
- Lay out the plants according to the planting plan.
- Plant containerized and bareroot trees and shrubs with shovel or comparable tool. Position the plants' root crowns so that they are at or slightly above the level of the surrounding soil surface.
- Firmly compact the soil around the plants to eliminate air spaces.
- Install anti-herbivore devices, such as seedling protection tubes or mesh protection netting, around the stems of plants as appropriate. Secure with stakes.
- Irrigate all newly installed plants as weather conditions warrant.

Bareroot Stock

- Bareroot stock will be a minimum size of 18 to 36 inches tall.
- Bareroot stock will be kept cool and moist before planting.
- The bareroot stock will have well-developed roots and sturdy stems with an appropriate root-to-shoot ratio.
- No damaged or desiccated roots or diseased plants will be accepted.
- Unplanted bareroot stock will be properly stored at the end of each planting day to prevent desiccation.

5.4. SCHEDULE

Year 1: 2015

- January 2015—Precision dredging and installation of the fish mix rounded rock is scheduled to be completed.
- January–March—Plant installation.
- April–October—Irrigation and maintenance.
- June–August—Conduct monitoring.
- November–December—Replace dead or failing plants as needed.

Year 2: 2016

- April–October—Irrigation and maintenance.
- June–August—Conduct monitoring.

Year 3: 2017

- April–October—Irrigation as needed and maintenance.
- June–August—Conduct monitoring.

Year 4: 2018

- April–October— Irrigation as needed and Maintenance.
- June–August—Conduct monitoring.

Year 5: 2019

- April–October— Irrigation as needed and Maintenance.
- June–August—Conduct monitoring.

5.5. MAINTENANCE

The planting areas will be maintained during the monitoring period to support native plant establishment and to control non-native invasive species. Maintenance will include the following activities.

Irrigation—An irrigation system will be established. In the first year following planting, the irrigation system will be set to allow for 0.5 inch of precipitation two times per week between June 15 and October 1. In the second year following planting, the irrigation system will be set to allow for 0.5 inch of precipitation once per week between June 15 and October 1.

Non-native Invasive Control—Non-native plants will be controlled through mechanical means, including hand removal, brush cutting, and mowing. These activities will be conducted two to three times per growing season, or as needed, during the monitoring period, from approximately April 1 through October 1.

Plant Replacement—Dead or failing plantings may be replaced to meet the performance standards. Dead or failing plants will be evaluated to determine the cause of the decline. Alternate native species may be selected as replacement plants if it appears that these will have a better chance of survival. Replacement plants will be installed as described for the original installation.

5.6. MONITORING PLAN

Planting areas will be inspected and monitored annually for five years. The goal of the monitoring inspections is to determine the survival rate of the installed plant material, to determine the extent of non-native invasive plant encroachment, and to identify maintenance tasks that are required to meet performance standards. Monitoring in the planting areas will include:

- Establishing photo documentation points.
- Comparing the number of planted native trees and shrubs to the number surviving.
- Identifying invasive plant material percent aerial cover and implementing removal as needed.

Monitoring Report

Following each inspection, a monitoring report will be prepared that notes observations made. The report will be submitted to the U.S. Army Corps of Engineers (COE) and will indicate if the planting is successful, not successful, or moving toward successful establishment. The information will indicate performance metrics and will contain photographs and a written description of the planting areas. The report will include the following information:

- The date of the inspection.
- Photodocumentation from established photo points to compare plant growth between monitoring inspections. The photos will be used to support

the findings and recommendations referenced in the report and to assist in assessing whether the project is successful for the monitoring period.

- A site location map indicating the monitoring area and locations of specific photo locations.
- A description of the conditions of the planting project.
- Conclusions. (If performance standards are not being met, a brief explanation of the difficulties will be included.)
- Recommendations for maintenance and adaptive management.

6. ADAPTIVE MANAGEMENT

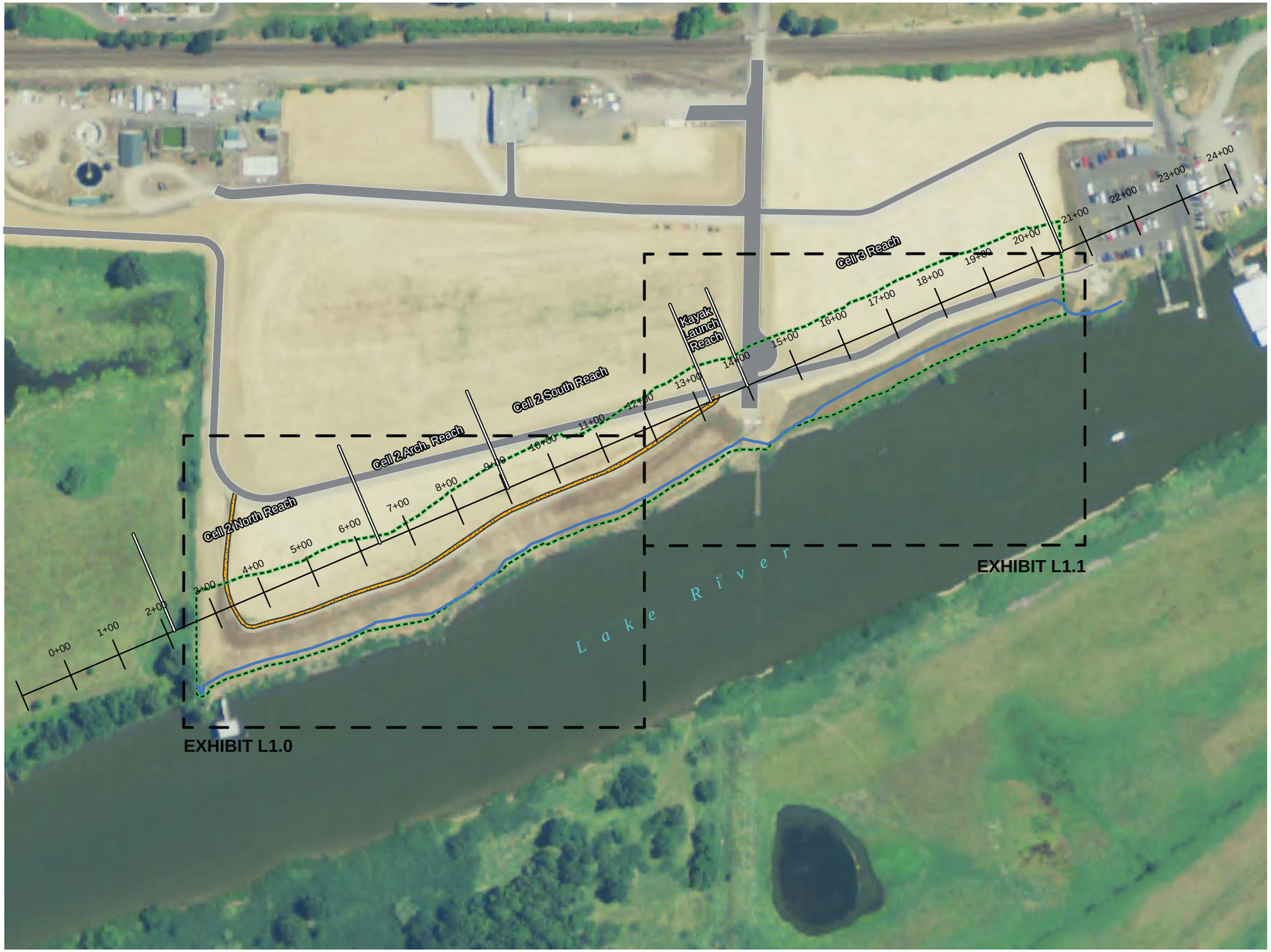
The monitoring and maintenance events will provide a basis of information for evaluating the success of the project and for making any recommendations for adaptive management that may be needed. If the COE or the Port of Ridgefield (the Port) believes that adaptive management of the riparian area is needed, they will collaboratively discuss options, and the Port will present a written proposal to the COE, identifying specific issues and measures for addressing them. Upon receiving written approval by the COE, the Port will proceed to implement the adaptive management measures.

LIMITATIONS

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

EXHIBITS



Legend

- Ordinary High Water
- Riparian Area
- Roads
- Gravel Trail

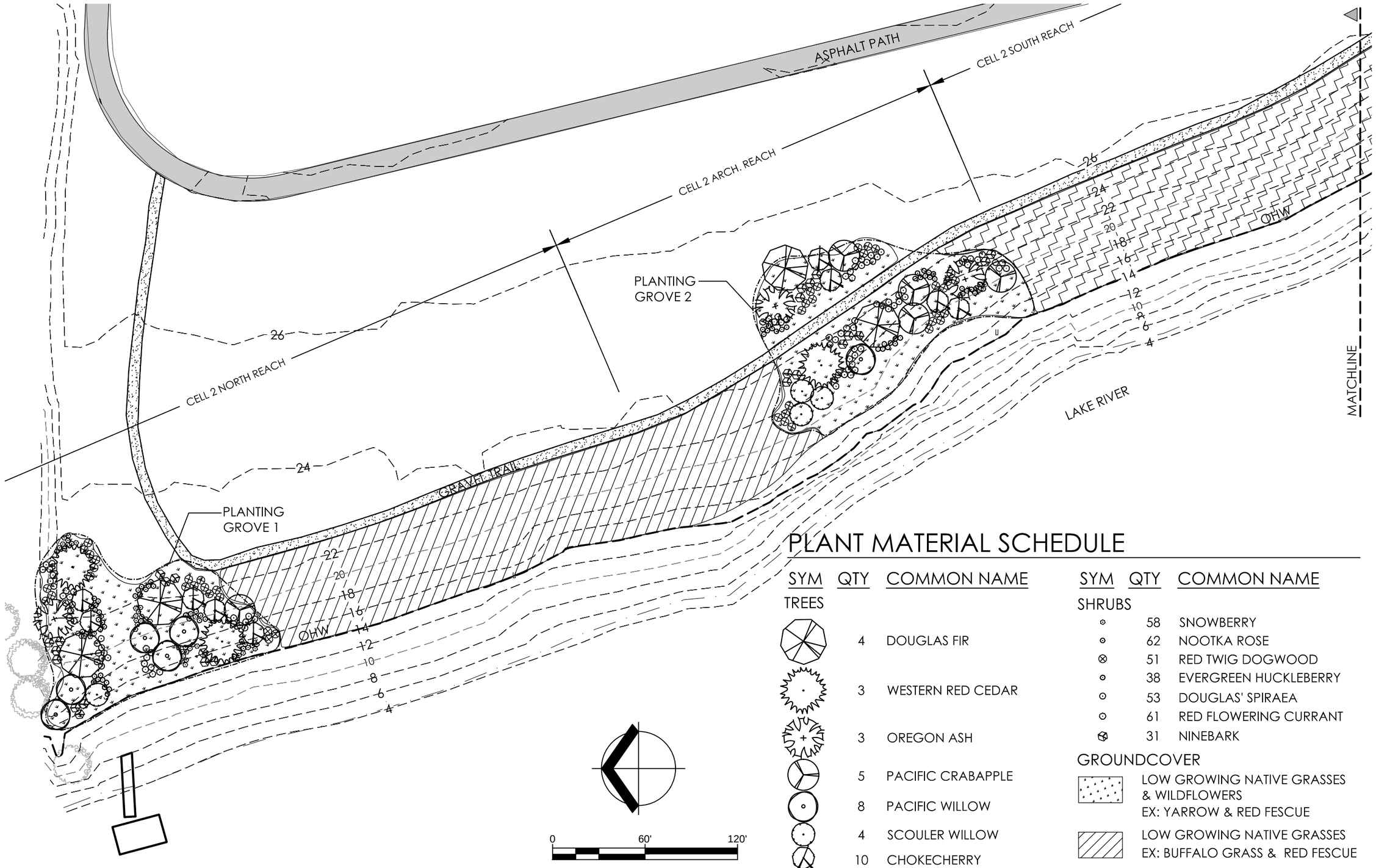
0 100 200
Feet

REMEDIAL ACTION VEGETATION PLAN
LAKE RIVER
PORT OF RIDGEFIELD
RIDGEFIELD, WASHINGTON

MFA JOB #:	9003.01.40
ISSUE DATE:	11/18/13
CHECKED:	M.NOVAK
DRAWN:	C.RILEY

MAUL FOSTER ALONGI
2001 NW 19TH AVENUE, SUITE 200
PORTLAND, OR 97209
PHONE: 971.544.2139
www.maulfoster.com

EXHIBIT
C1.0



PLANT MATERIAL SCHEDULE

SYM	QTY	COMMON NAME
TREES		
	4	DOUGLAS FIR
	3	WESTERN RED CEDAR
	3	OREGON ASH
	5	PACIFIC CRABAPPLE
	8	PACIFIC WILLOW
	4	SCOULER WILLOW
	10	CHOKECHERRY

SYM	QTY	COMMON NAME
SHRUBS		
	58	SNOWBERRY
	62	NOOTKA ROSE
	51	RED TWIG DOGWOOD
	38	EVERGREEN HUCKLEBERRY
	53	DOUGLAS' SPIRAEA
	61	RED FLOWERING CURRANT
	31	NINEBARK
GROUNDCOVER		
		LOW GROWING NATIVE GRASSES & WILDFLOWERS EX: YARROW & RED FESCUE
		LOW GROWING NATIVE GRASSES EX: BUFFALO GRASS & RED FESCUE
		TALLER NATIVE GRASSES EX: TUFTED HAIRGRASS & BLUE WILDRYE

0 60' 120'

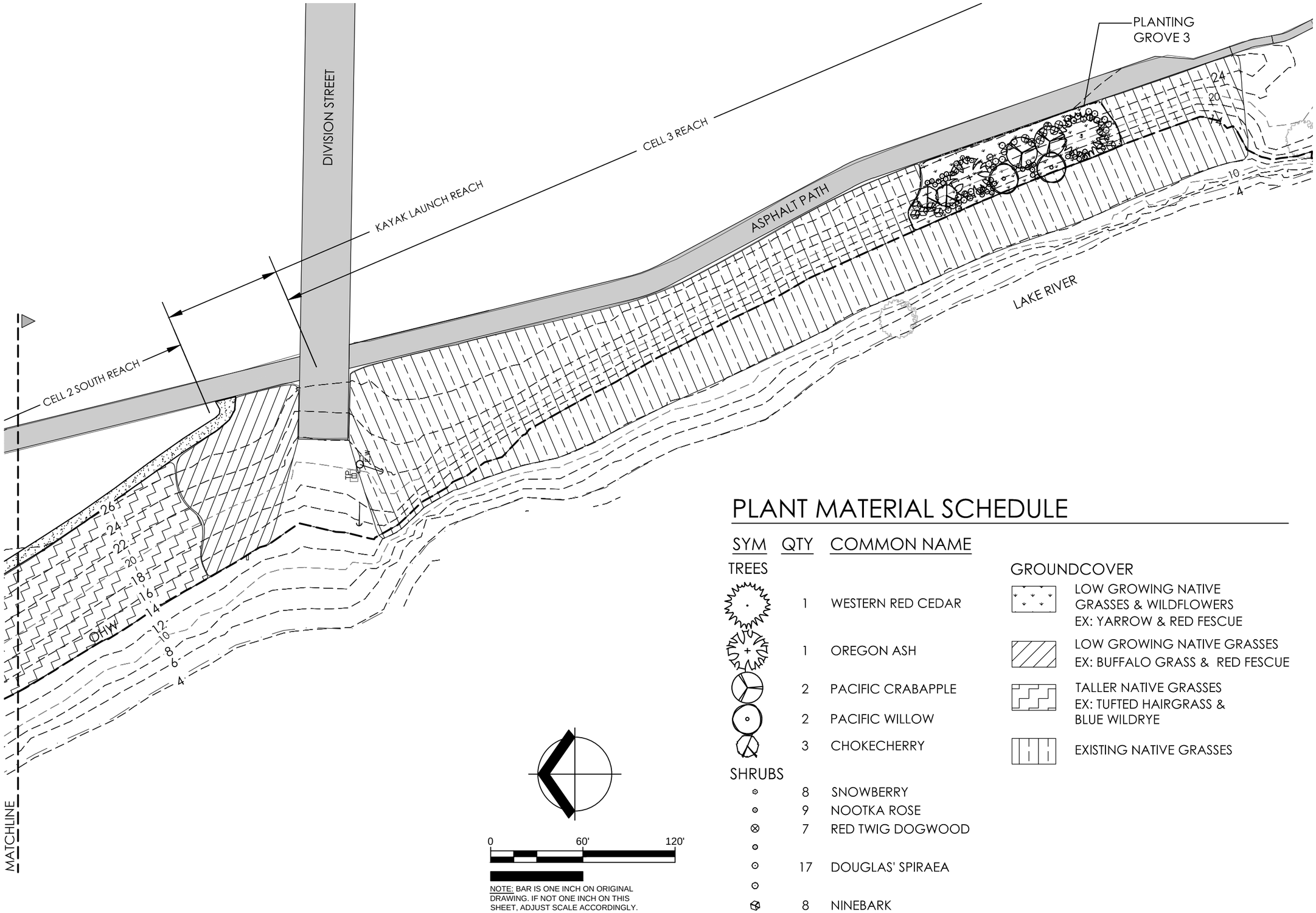
NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

MFA JOB #:	9003.01.40
ISSUE DATE:	01/15/14
CHECKED:	M.NOVAK
DRAWN:	C.RILEY

MAUL FOSTER ALONGI
2001 NW 19TH AVENUE, SUITE 200
PORTLAND, OR 97209
PHONE: 971.544.2139
www.maulfoster.com

REMEDIAL ACTION VEGETATION PLAN
LAKE RIVER
PORT OF RIDGEFIELD
RIDGEFIELD, WASHINGTON

EXHIBIT
L1.0



NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

PLANT MATERIAL SCHEDULE

SYM	QTY	COMMON NAME
TREES		
	1	WESTERN RED CEDAR
	1	OREGON ASH
	2	PACIFIC CRABAPPLE
	2	PACIFIC WILLOW
	3	CHOKECHERRY
SHRUBS		
	8	SNOWBERRY
	9	NOOTKA ROSE
	7	RED TWIG DOGWOOD
	17	DOUGLAS' SPIRAEA
	8	NINEBARK

GROUNDCOVER

- LOW GROWING NATIVE GRASSES & WILDFLOWERS EX: YARROW & RED FESCUE
- LOW GROWING NATIVE GRASSES EX: BUFFALO GRASS & RED FESCUE
- TALLER NATIVE GRASSES EX: TUFTED HAIRGRASS & BLUE WILDRYE
- EXISTING NATIVE GRASSES

REMEDIAL ACTION VEGETATION PLAN
LAKE RIVER
PORT OF RIDGEFIELD
RIDGEFIELD, WASHINGTON

MFA JOB #:	9003.01.40
ISSUE DATE:	01/15/14
CHECKED:	M.NOVAK
DRAWN:	C.RILEY

MAUL FOSTER ALONGI
2001 NW 19TH AVENUE, SUITE 200
PORTLAND, OR 97209
PHONE: 971.544.2139
www.maulfoster.com

EXHIBIT
L1.1

FIGURE

Source: Aerial photograph obtained from NAIP (2013).
Points and lines measured using Trimble GeoExplorer (MFA).

Note: NGVD = National Geodetic Vertical Datum

Legend

- Ordinary High Water (+14
- Vegetation Measurement Line (Field GPS Measurement)
- Tape Measurement Point

Total Native Vegetation Measured: 148 linear feet

Figure
Lake River
Shoreline Native Vegetation

NWS-2013-875
Lake River Remedial Action
Port of Ridgefield
Ridgefield, Washington

Township 4N, Range 1W, W.M Section 24

0 75 150
Feet

MAUL FOSTER ALONGI
p. 971 544 2139 | www.maulfoster.com

Path: X:\9003.01 Port of Ridgefield\40\Projects\Fig_Lake River Shoreline Native Vegetation.mxd
Print Date: 1/15/2014
Approved By: P. Wiescher
Produced By: jschane
Project: 9003.01.40

APPENDIX

APPENDIX—PHOTOGRAPHS

Project Name: Lake River Remedial Action
Project Number: 9003.01.40
Location: 111 West Division Street
Ridgefield, Washington

Photo No. 1
Shoreline looking southwest towards Port marina: reed canary grass, false indigo, and blackberry. South of Cell 3.

Photo No. 2
Native black cottonwood and reed canary grass, looking west. Cell 3 south.

APPENDIX—PHOTOGRAPHS

Project Name: Lake River Remedial Action
Project Number: 9003.01.40
Location: 111 West Division Street
Ridgefield, Washington

Photo No. 3
Willow species and reed canary grass, looking west. Cell 3 south.

Photo No. 4
Knotweed (Polygonum sp.), reed canary grass, and blackberry, looking southwest. Cell 3 south.

APPENDIX—PHOTOGRAPHS

Project Name: Lake River Remedial Action
Project Number: 9003.01.40
Location: 111 West Division Street
Ridgefield, Washington

Photo No. 5
Oregon ash, and reed canary grass, looking northwest. Cell 3 middle.

Photo No. 6
Knotweed (dark brown), reed canary grass, and thistle, looking south. Cell 3 north.

APPENDIX—PHOTOGRAPHS

Project Name: Lake River Remedial Action
Project Number: 9003.01.40
Location: 111 West Division Street
Ridgefield, Washington

Photo No. 7
False indigo bush and reed canary grass, looking north. Cell 2 south.

Photo No. 8
Willow species (center) surrounded by false indigo bushes, reed canary grass, and knotweed (dark brown), looking south. Cell 2 south.

APPENDIX—PHOTOGRAPHS

Project Name: Lake River Remedial Action
Project Number: 9003.01.40
Location: 111 West Division Street
Ridgefield, Washington

Photo No. 11
Oregon ash shrub in foreground, reed canary grass and false indigo in background, looking west. Cell 2 middle.

Photo No. 10
Native cottonwood in foreground, false indigo bushes in background, looking west. Cell 2 middle.

APPENDIX—PHOTOGRAPHS

Project Name: Lake River Remedial Action
Project Number: 9003.01.40
Location: 111 West Division Street
Ridgefield, Washington

Photo No. 11
Willow sp. shrub in foreground, reed canary grass and false indigo in background. Cell 2 middle.

Photo No. 12
Reed canary grass, false indigo bushes, and small Oregon ash to the right, looking northwest. Cell 2 middle.

APPENDIX—PHOTOGRAPHS

Project Name: Lake River Remedial Action
Project Number: 9003.01.40
Location: 111 West Division Street
Ridgefield, Washington

Photo No. 13
20’ tall native tree (tentatively identified as an ash species based on seed pods) in foreground surrounded by false indigo bushes; native 14’ (ash) tree on the right, looking west. Cell 2 north.

Photo No. 14
Native tree (tentatively identified as an ash species based on seed pods), looking west. Cell 2 north.

APPENDIX H

RFIs AND FIELD DIRECTIVE

Emily Hess

From: Josh Elliott
Sent: Monday, January 05, 2015 12:03 PM
To: Mercuri, Joyce (ECY); Craig Rankine (cran461@ecy.wa.gov)
Cc: Laurie Olin; Madi Novak; Connor Lamb
Subject: Lake River field directive
Attachments: 01.01.2015 Progress Survey Evaluation.pdf

Good afternoon Joyce and Craig,

I wanted to provide an update regarding a field directive we provided to the contractor last Friday. While completing the remaining dredging within the area of the transload berth on New Year's Eve, the contractor encountered some very solid material within the area of the former kayak launch (approval units A27, A28, B27, and B28). The contractor was able to remove the majority of the sediment to the target elevation. However, after spending several hours in these approval units trying to remove the remaining material with the Young bucket, some small areas remain that are above the target elevation (amounting to less than 8 cubic yards). After many attempts with the Young bucket it was concluded that the additional material was too densely compacted to be removed using this method. The contractor also evaluated the effectiveness of using the long-reach excavator to achieve the target elevation, but was unable to retrieve additional material.

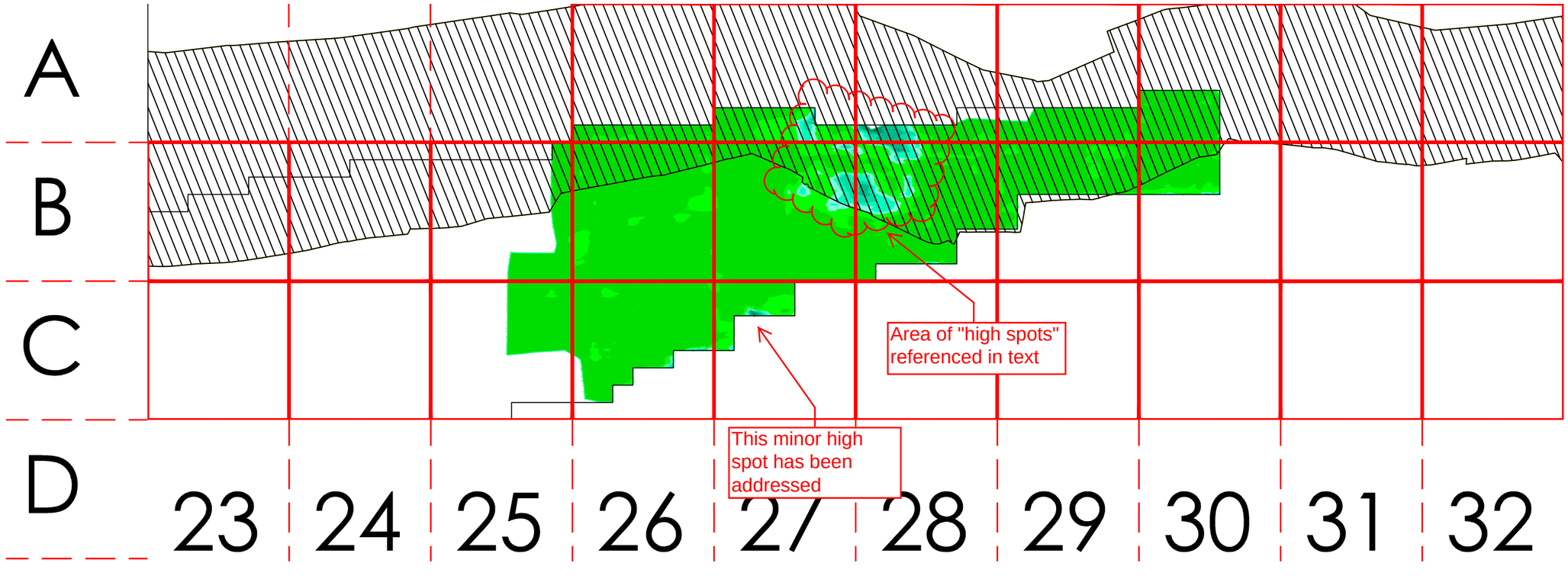
The attached figure shows the comparison of the target elevation with the contractor's progress bathymetric survey; the colors represent elevation ranges and can be seen in the table, with positive elevations representing "high spots" in the post dredge survey relative to the target surface. For a variety of reasons, it is not anticipated that the presence of these "high spots" substantially affect the desired outcome of the project (i.e., limiting exposure to dioxins and attaining an area-wide cleanup level of 5 ng/kg dioxin TEQ). The area (550 ft^2) and total volume (less than 8 cubic yards) is limited. Nearby sample concentrations were relatively low: LRIS-LR-05 at 30 ng/kg dioxin TEQ and LRIS-LR-06 at 14 ng/kg dioxin TEQ. The concentration at LRIS-LR-122 in the top 10 centimeters over 100 feet north of the kayak launch area was higher at 250 ng/kg dioxin TEQ, however the concentration at one to two feet below the mudline decreased substantially to 38 ng/kg dioxin TEQ and the data show a decreasing trend to the south in the area of the limited high spots. The substrate in the area of the high spots is densely compacted and is within the designed extents of fish mix rock (the diagonal hatching on the attached figure), limiting the likelihood of migration of any contamination associated with sediment in this area.

As an additional measure of protectiveness, the Port is requiring the contractor to extend the filter fabric under the entire footprint of the rock and to add additional rock; this additional rock and fabric will act to eliminate exposure and further reduce potential migration of any fines from these "high spots."
We attempted to contact both of you by phone last Friday but understand that you were both out until this week. In order to avoid a significant delay in the continued progress of the project, we elected to allow the placement of clean sand within this area, with the additional filter fabric and rock requirements noted above.

If you have any questions, please feel free to contact me or Madi – we'd be happy to discuss.

Thanks,

JOSH ELLIOTT, PE MAUL FOSTER & ALONGI, INC.
p. 971 544 2139 | m. 503 953 6067 | f. 971 544 2140 | www.maulfoster.com
2001 NW 19th Avenue, Suite 200, Portland, OR 97209



Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	-2.61	-0.50	
2	-0.50	0.00	
3	0.00	0.20	
4	0.20	0.40	
5	0.40	0.60	
6	0.60	0.80	
7	0.80	1.00	
8	1.00	1.19	

0 40' 80'

NOTE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALE ACCORDINGLY.

MFA JOB #: 9003.01.40-06
ISSUE DATE: 01/01/2015
CHECKED: C. LAMB
DRAWN: J. ELLIOTT

MAUL FOSTER ALONGI
400 E Mill Plain Blvd., Suite 400
Vancouver, WA 98660
360.694.2691 [p] 360.906.1958 [f]
www.maulfoster.com

01/01/2015 SURVEY COMPARISON TO NEATLINE
LAKE RIVER SEDIMENT REMEDY
PORT OF RIDGEFIELD
RIDGEFIELD, WASHINGTON

EXHIBIT 1

Filepath:C:\Users\jelliott.MFA-DOMAIN\Desktop\01.01.2015 Progress Survey Evaluation.dwg
Printed by:Josh Elliott
Date:1/2/2015 8:12:58 AM

DIXON MARINE SERVICES, INC.
AN OCEANOGRAPHIC , WETLAND RESTORATION FIRM
415.669.7369 OFFICE
P.O.BOX 424, INVERNESS, CA 94937
415.669.7409 FAX

DIXON MARINE SERVICES, INC.
AN OCEANOGRAPHIC, WETLAND RESTORATION FIRM
415.669.7369 OFFICE
P.O.BOX 424, INVERNESS, CA 94937
415.669.7409 FAX

Port of Ridgefield Sediment Remedy

Submittal Title:
Request For Information (FRI)

Date: 10.20.14

Submittal Ref. Number:
Section 35 23 16 Dredging
Dredging Work Plan

Revision Number: 001

Attention:

Maul Foster & Alongi
Portland Office
2001 NW 19th Avenue, Suite 200
Portland, OR 97209

Submitted by:
Mark Sutton – Principal
Dixon Marine Services, Inc.
12786 Sir Francis Drake Blvd. / PO Box 424
Inverness, CA 94937

SubContractor(s):
(Detail if Applicable)

Supplier(s):
(Detail if Applicable)

Manufacturer(s):

Drawing Number(s) & Detail Reference(s):
(Detail as Needed)

DIXON MARINE SERVICES, INC.
AN OCEANOGRAPHIC , WETLAND RESTORATION FIRM
415.669.7369 OFFICE
P.O.BOX 424, INVERNESS, CA 94937
415.669.7409 FAX

Request for Information: DMS is requesting the consideration of alternating the sequence of dredging as described in the submitted Dredge Operation plan. The plan outlines the dredging sequence in the "Operational Best Management Practices" section of the document as presented below

OPERATIONAL BEST MANAGEMENT PRACTICES

Operational controls will be employed to minimize re-suspension of sediments during dredging operations. All associated activities shall be adjusted in response to water quality concerns.

- *Dredging shall be completed in a methodical, controlled, and engineered manner using state of the art software tracking systems validated by "as completed" surveys.*
- ***Dredging will begin at the upstream removal units and proceed downstream, thereby minimizing the potential for gravity-driven migration (net current direction) of suspended sediments seeking to re-deposit over previously dredged areas.***
- ***Dredging will begin at the highest elevation and work towards the lowest, thereby minimizing the potential for sediment sloughing into areas already dredged.***

.

DMS is requesting to change the sequence of dredging to staring at Approval Unit 29 D and proceed towards shore and up stream. The reasoning for this request is:

- Greater efficiency for pipeline management
- Reduction in potential navigation conflicts between the dredging project and recreational boaters
- Shorter pipeline and subsequent greater efficiency for slurry transmission
- It will provide the opportunity to start placing the ENR Sand sooner in the project schedule where both tasks can be conducted concurrently there by providing opportunity to makeup time in the schedule
- ERN Sand placement would be proposed to start after Approval Unit 46 A, B and C are completed and accepted
- This approach would provide enough separation between the two tasks to provide a safe work site

DMS would resubmit the Dredging Work Plan to reflect the change in the dredging sequence

Emily Hess

From: Jeff Haran <jharan@dixonmarineservices.com>
Sent: Monday, November 10, 2014 3:55 PM
To: Connor Lamb; Josh Elliott
Cc: Mark Sutton; Kalloch Fox
Subject: RFI - Fish Mix Geotextile Color

Is orange colored Geotextile required for the Fish Mix or can we go with black?

Jeff Haran
Dixon Marine Services Inc.
415.819.5842 cell
415.669.7369 office
415.669.7409 FAX
jharan@dixonmarineservices.com
http://www.dixonmarineservices.com

Emily Hess

From: Kalloch Fox <kfox@dixonmarineservices.com>
Sent: Saturday, November 22, 2014 5:36 PM
To: Josh Elliott; Connor Lamb
Cc: Mark Sutton
Subject: RFI

Gentlemen, I would like some clarity on your intentions regarding fish mix placement on and aroung the outfalls in the North reach. Is the rip rap and fabric currently installed to be removed and replaced? Obviously the anchor trench will bisect the PVC outfall so some clarity would be appreciated.
Cheers,

Kalloch Fox
Dixon Marine Services Inc.
www.dixonmarineservices.com
Office: 415-669-7369
Cell: 415-717-5830
kfox@dixonmarineservices.com