

Alder Creek Restoration Project

2024 Monitoring Report Year 9

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LIST OF DEFINITIONS

Reporting Period	November 1st of the preceding year (2023) through October 31st of the current year (2024).
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LIST OF ABBREVIATIONS

ACM	Active Channel Margin
DSAYs	Discounted Service Acre Years
Project	Alder Creek Restoration Project
PRPs	Potentially Responsible Parties
Trustees	Portland Harbor Natural Resource Trustee Council
Report	Year 9 Habitat Monitoring Report/Annual Report for the Alder Creek Project

I. OVERVIEW

This report serves as the Year 9 (2024) Habitat Monitoring Report/Annual Report (“Report”) for the Alder Creek Restoration Project (“Project”). The Alder Creek Restoration Plan was signed by all members of the Portland Harbor Trustee Council by July 2014 and the site was established (e.g., Deed Restriction recorded and financial securities posted) in February 2015. This report will include all the requirements of the Habitat Monitoring Report as detailed in Exhibit B-1, Section 6.4 and 6.4.1. of the Restoration Plan (Plan).

Report Time Period

Per the Plan, the “Reporting Period” is from November 1st of the preceding year (2023) through October 31st of the current year (2024). This report documents the ninth year of the Establishment Period for the Alder Creek Restoration Project.

A. RESPONSIBLE PARTIES

The Alder Creek Restoration Project (“Project”) is a site that has been developed for use by potentially responsible parties (“PRPs”) and/or the Portland Harbor Trustee Council (“Trustees”) to satisfy restoration obligations resulting from the Natural Resource Damages Assessment in Portland Harbor. The Restoration Plan was signed in 2014 by:

- National Oceanic and Atmospheric Administration, acting on behalf of U.S. Department of Commerce
- U.S. Fish and Wildlife Service, acting on behalf of U.S. Department of the Interior
- Oregon Department of Fish and Wildlife, acting on behalf of State of Oregon
- Confederated Tribes of the Grand Ronde Community of Oregon
- Confederated Tribes of Siletz Indians
- Confederated Tribes of the Umatilla Indian Reservation
- Confederated Tribes of the Warm Springs Reservation of Oregon
- Nez Perce Tribe

The eight signatories to the Restoration Plan are collectively referred to as the Trustees. The Project was established (Deed Restriction recorded and financial securities posted) in February 2015. Earthwork related to habitat construction was completed in October 2015. Monitoring years are listed in the methods section below.

People responsible for the monitoring, maintenance, management, and reporting for the Alder Creek Restoration Project include the following:

Restoration Implementer
and Property Owner: Portland Harbor Holdings II, LLC (Wildlands)

Project Biologists: Bill Roper, Wildlands
Staff Biologists, Turnstone Environmental

Land Management: Rogelio Chavez, Wildlands

Report Preparation: Julie Mentzer, Project Manager, Wildlands
Bill Roper, Director of Biological Services, Wildlands

B. PURPOSE

The purpose of the Project is to restore, create, and enhance approximately 52.28 acres (Property) on the southern tip of Sauvie Island at the divergence of the Willamette River and Multnomah Channel located in Multnomah County just outside of the City of Portland, Oregon. The Project provides restoration credits in the form of discounted service acre years (DSAYs) that may be used to offset restoration obligations under NRDA.

C. LOCATION

The Restoration Project is located in the northernmost reach of the Portland Harbor Superfund Site on the southern tip of Sauvie Island (see **Figures 1 and 2**). The Sauvie Island Drainage Improvement Company's (SIDIC) levee bisects the Property and separates the Property into two distinct areas. The southeastern portion of the Project (waterward of the SIDIC levee and within the floodplain of the Willamette River) is approximately 32 acres and is bordered by the SIDIC Levee on the north, mostly undeveloped private property to the northeast, the Willamette River to the east, and the Multnomah Channel to the southwest. The northwestern portion of the Project (landward of the SIDIC levee and outside of the active floodplain) is approximately 20 acres and is bordered on the northeast by private rural-residential property, on the east by a utility easement, on the south by the SIDIC Levee, and by the ESCO Landfill to the northwest.

The Project is located within Township 2N, Range 1W, Sections 27, 28, and 34 of the Linnton and Sauvie Island, Oregon 7.5-minute U.S. Geological Survey quadrangle maps, Willamette Meridian, identified by tax lot numbers 700 and 800.

D. HABITAT CONSTRUCTION AND PLANTING

Habitat construction commenced in June 2014. After completing approximately 25% of the site, the remainder of the site was graded to prevent fish stranding in the event of a 100-year event, and the site was buttoned-up for winter. Grading resumed in June 2015 and the earthwork was completed in October 2015. Planting began in the summer of 2015; however, the majority of the plants were installed in spring and summer of 2016, with the final planting effort occurring in November and December of 2016. In November 2019, the oak-dominated upland forest required adaptive management and was replanted. Table 1 provides a summary of habitat acreages from the 100% design drawings and the final as-built drawings. Table 2 provides information regarding the planting efforts on the site including the replanting effort completed in 2019.

Table 1. Proposed and As-Built Restoration Habitat Types			
Habitat Type	Active Channel Margin	Proposed (acres)	As-Built (acres)
Side Channel (off-channel habitat)	No	3.10	3.16
Mudflat or Beach	Yes	3.29	3.46
Vegetated Marsh	Yes	5.57	5.13
Scrub-shrub riparian below the OHWL	Yes	11.15	11.76
Riparian forest within the historic floodplain	No	8.79	8.39
Riparian forest outside the historic floodplain (upland cottonwood-dominant forest)	No	7.05	7.20
Upland Oak-dominant forest	No	13.33	13.18
Total ACM		20.01	20.35
Total Project Acreage (including ACM)		52.28	52.28

Table 2. Planting Schedule				
Habitat	Date Planted	Density Proposed	Density Planted	Substitutions
Perennial Marsh (created in 2014)	July/August 2015	5,000 plants/acre	5,000 plants/acre	Carex densa substituted for Carex aperta
Scrub-shrub and Riparian; elevation 13 (water level) and above*	February 2016	2,000 plants/acre	2,000 plants/acre	None
Perennial marsh (created in 2015)	July/August 2016	5,000 plants/acre	5,000 plants/acre	Carex densa substituted for Carex aperta
Scrub-shrub (elevations 10 to 13)*	October 2016	2,000 plants/acre	2,000 plants/acre	None
Upland Forest: Cottonwood dominant	December 2016	2,000 plants/acre	2,000 plants/acre	Rubus ursinus substituted for Rubus idaeus
Upland Forest: Oak dominant	December 2016	860 plants/acre	860 plants/acre	Rubus ursinus substituted for Rubus idaeus
Upland Forest: Oak dominant	November 2019	1,200 plants/acre	1,200 plants/acre	None

* During the February 2016 planting, the water level was at elevation 13 so the scrub-shrub areas between 10 and 13 were planted in October 2016 when the water level was below 10 feet.

E. PERFORMANCE STANDARDS

There is only one performance standard for Year 9:

- Annual inspection to document any fish barriers.

F. CORRECTIVE OR MAINTENANCE ACTIVITIES

Activities to control and manage invasive species have been occurring on the site since 2013. Beginning in 2013, in the areas outside of the grading limits, a combination of mowing and supplemental hand removal was used to minimize the cover of reed canarygrass (*Phalaris arundinacea*) and Himalayan blackberry (*Rubus armeniacus*). During early management activities, a significant amount of native trailing blackberry (*Rubus ursinus*) was found and retained in these areas.

After the completion of grading activities in October 2015, ongoing invasive species management activities were conducted to minimize invasive species establishment. Invasive species management during the Reporting Period (November 1, 2023 to October 31, 2024) is discussed further in the “Habitat Data/ Results” section.

In Year 9, a Wildlands’ representative regularly visited the site to assess trespass, trash, invasive species, erosion, and to conduct general inspections of the site. Wildlands’ land management team (consisting of 6-7 staff members) conducted three week-long land management visits to the site during the summer months (e.g., June, July, and August) to perform all necessary land management and maintenance duties including checking and repairing signs, assessing and treating invasive species, looking for signs of trespass, collecting and disposing of trash, and fulfilling any other management or maintenance needs. See **Appendix 1** for the Maintenance Activity Log.

A replant of the oak-dominated upland forest was conducted in November 2019 to address a significant loss of planted trees and shrubs. The planted trees and shrubs were irrigated in 2020, 2021, 2022, and 2023.

G. RECOMMENDATIONS FOR CORRECTIVE OR REMEDIAL ACTIONS

While the Year 7 monitoring showed that the emergent marsh habitat was not meeting the 40% native herbaceous performance standard, the marsh is functioning as expected with native marsh vegetation varying greatly from year to year depending on factors such as climate, river levels, etc. . The percent cover of native herbaceous vegetation is expected to continue to fluctuate from year to year due to varying conditions, and there are no corrective actions or remedial actions that would make a significant difference in habitat performance. Formal monitoring will be conducted in Year 10.

Year 7 monitoring identified that the riparian forest and cottonwood-dominated upland forest habitat did not meet the native woody species cover performance standard for Year 7, but all other performance standards were being met. The cover of native woody species in this habitat is expected to continue to increase each year and informal observations suggest the habitat is on a trajectory towards meeting future performance standards, although slightly delayed. Formal monitoring will be conducted in Year 10.

The current goal for the oak-dominant upland habitat is to continue efforts to establish the native woody vegetation. Irrigation was not needed in Year 9 and is not expected to be needed in Year 10. Invasive species management activities are ongoing and will focus on hand removal until the chemical and/or

mechanical control methods can be used without harming the young woody species. No additional corrective or remedial actions are recommended for the oak-dominated upland forest.

II. HABITAT MONITORING REQUIREMENTS

Monitoring requirements, including past, current, and future years, are provided below. These requirements were taken from the “Habitat Development Plan” of the signed Alder Creek Restoration Plan and included in this report for reference (see Table 3). If monitoring methods differ in any year from those prescribed in the Habitat Development Plan, the change in method and the reason for the change will be detailed in the Habitat Monitoring Data/Results section.

Table 3. Establishment Period Monitoring Schedule													
Biological Resource <i>Component</i>	Monitoring Frequency	January	February	March	April	May	June	July	August	September	October	November	December
Hydrology & Geomorphology													
<i>Visual Surveys for LWD retention</i>	Years 2, 3, 5, 7, 10								X				
<i>Visual Inspections for any fish barriers</i>	Annual								X				
<i>Topography</i>	Years 1, 3, 5, 7, 10								X				
Invasive Plant Species													
<i>Vegetation</i>	Years 1, 2, 3, 4, 5, 7, 10			X					X				
Native Vegetation													
<i>Riparian Scrub/Shrub, Riparian Forest, Upland Forest</i>	Years 2-5, 7, 10								X				
<i>Emergent Marsh</i>	Years 2-5, 7, 10								X				
Wildlife													
<i>Fish Surveys</i>	Years 2*, 3, 5, 7, 10		X	X	X	X							
<i>Bald Eagle Surveys</i>	Years 3, 5, 7, 10	X	X	X	X	X	X	X	X				/
<i>Bird Surveys</i>	Years 2*, 3, 5, 10				X	X	X						
<i>Mink Surveys</i>	Years 3, 5, 7, 10					X	X	X					
General Site Monitoring													
<i>Aerial Photographs</i>	Years 1, 3, 5, 7, 10								X				
<i>Photo Documentation</i>	Years 1-5, 7, 10								X				

* Fish surveys and bird assemblage surveys were scheduled to occur in Year 1 (2016); however, they were delayed until Year 2 (2017). All other scheduled monitoring events will occur as previously scheduled.

A. MONITORING PERIOD AND SCHEDULE

The Project includes numerous habitat monitoring requirements over the initial ten-year interim monitoring period (i.e., Establishment Period), which differ by year (Table 3). The ten-year monitoring period is as follows (listed by reporting year):

Year 1 - 2016
Year 2 – 2017
Year 3 – 2018
Year 4 – 2019
Year 5 – 2020
Year 6 – 2021
Year 7 – 2022
Year 8 – 2023
Year 9 – 2024
Year 10 – 2025

B. HABITAT MONITORING METHODS

1. AERIAL PHOTOGRAPH INTERPRETATION

Aerial photos will be taken during late summer each year that aerial photography is required. This will allow a year to year comparison of the development of planted vegetation, geomorphology, and will allow the tracking of general changes to the Restoration Site that may be difficult to detect during surveys constructed from the ground.

2. PHOTO DOCUMENTATION

Ten permanent photograph locations have been recorded with Global Positioning System (GPS) to illustrate year-to-year progress of the Project. Subsequent photos will be taken from the same location each year photo documentation is required. At these permanent photograph locations, the monitoring biologist will take four direction photos, one in each cardinal direction (N, E, S, W), unless the photo location borders the Project boundary, in which case photos will be taken from all directions that show the Project. These photos will be taken in August or September in each year that photo documentation is required.

3. HYDROLOGY AND GEOMORPHOLOGY

During years 1, 3, 5, 7, and 10, topographic surveys will be completed once a year after the wet season to document changes in site topography and structural habitat features. Topographic surveys will include collecting topographic readings along the 5 pre-selected, permanent monitoring transects. In addition, once a year during years 2, 3, 5, 7, and 10 after the wet season a visual inspection will be made to document any barriers that prevent fish from entering or exiting the site. If a fish barrier is identified, the Trustee Council will be notified within three (3) business days of discovery. Aerial photos of the site will be collected once during late summer during years 1, 3, 5, 7, and 10. Data from the Columbia Slough gauge was used to monitor water elevation levels on the site. The USGS station at Columbia Slough has been determined to accurately and reliably provide a published record of the condition and water levels at the Alder Creek Restoration Site. This station is located approximately 2 miles down-river of the Project

site. To determine the accuracy of this published data, the river elevation at the Project site has been surveyed on numerous occasions between 2010 and 2022 by both Wildlands' staff and by licensed surveyors from AKS Engineering and Forestry. The surveyed river elevation data has been compared to the closest published 15-minute interval "gage height" at the USGS Columbia Slough station. It has been found to accurately match with the survey data, with an average difference of less than 0.02 feet. Historic water data from this station can be downloaded and a clear picture of the hydrology of the Project site can be determined. Additionally, a satellite aerial photo corresponding to the high water event for the monitoring year (or as close to the high water event as is available) was obtained for Years 4, 5, and 7. The photos were analyzed to determine the acres of inundation within the ACM at the time of the photo. Two data loggers were installed on the Project site in October 2020 to collect water level data for Years 7 and 10. While there is a high likelihood that the onsite data loggers could be lost or damaged (e.g. being bent or damaged by floating debris during flood events) to the point of compromising accuracy, we will attempt to use this method in Years 7 and 10 rather than rely on satellite imagery availability which is limited by wind, rain, and cloud conditions.

In order to determine if changes of more than 10% in active channel margin (ACM) acreage from the as-built surveys have occurred, the following method will be followed: For Years 3 and 5, additional elevation points were taken along elevation 20 to determine if the acreage of active channel margin (ACM) has changed by 10% or more. However, as tree and shrub cover increases, surveying along elevation 20 may be increasingly difficult. If dense tree and shrub cover prohibits surveying along elevation 20, visual surveys will be conducted in Years 7 and 10 to record any observed changes. In addition, elevations will be recorded along the original transects to determine if the width of the ACM has changed along the transects.

4. NATIVE VEGETATION

Riparian Scrub-Shrub, Riparian Forest, and Upland Forest

Monitoring will include:

- direct counts of a sub-sample of live installed woody plants,
- direct counts of volunteer plants by species within established sample plots at various locations.
- vegetation cover estimates (herbaceous species only during Years 2-5 and all species thereafter), and
- representative photographs taken from (a minimum of ten) permanent photographic documentation points.

Quantitative monitoring data will be primarily collected using 10x10 meter sample plots along five main baseline transects running more or less north/south across the site (**Figure 3**). Beginning in Year 5, three additional sample plots within the upland forest will be monitored during the monitoring events within the upland forest. The locations of the three additional sample plots have been added to Figure 3.

In each monitoring year, data will be tallied by species and each woody plant will be assessed for plant vigor (i.e., good, fair, poor). Density data will be extrapolated to a per acre estimate by dividing the total number of trees observed by the amount of surveyed acreage per each habitat. Signs of beaver herbivory will also be noted. The sample plots will also be used to assess cover and diversity for the wooded habitats. Cover classes will be used to determine cover values for each species identified within the plot. The presence and extent of any invasive plant species will be documented throughout the riparian areas during this monitoring.

Emergent Marsh

Monitoring of emergent marsh vegetation will be conducted in Years 2, 3, 4, 5, 7, and 10. Monitoring shall include visual surveys of the emergent marsh vegetation. Cover and diversity will be quantified using a quadrat method. A sampling transect will be run perpendicular to the baseline transect and quadrat data will be collected along the sampling transect. The frequency of sampling quadrats and the size of quadrats will be tailored to best assess this habitat type. The sampling interval and the size of the quadrat will be determined in the field based on pilot sampling data.

Cover classes will be used to determine cover values for each species identified within the quadrat. Bare soil, rock, wood, or other non-plant cover will also be quantified. The location of the sampling transect will need to be determined in the field because the extent of this habitat type occurs in a fairly narrow belt along the constructed channels. A sampling transect will be run perpendicular to the main baseline transects and quadrat data will be collected along the sampling transect. The frequency of sampling quadrats and the size of quadrats will be tailored to best assess this habitat type and based on pilot sampling data. The extent of existing habitat will then be compared to construction drawings and design goals in order to assess the relative success of management efforts.

5. LARGE WOODY DEBRIS

Large woody material monitoring will be performed in Years 2, 3, 5, 7, and 10 following winter-spring floods to assess overall quality and stability of placed large woody material as well as any natural recruited wood, and to assess their function. Monitoring will consist of visual inspections by foot or by boat.

6. INVASIVE NON-NATIVE PLANT SPECIES

In Years 1 through 5, 7, and 10 invasive vegetation field surveys will be conducted annually during the riparian, marsh, and forest habitat monitoring. During Years 6, 8, and 9, invasive species presence will be noted and mapped during general site assessments, and any necessary treatments will be undertaken depending on the species and its extent. Invasive species are as defined in Section 6.1.8 in the Habitat Development Plan.

7. FISH MONITORING

Fish will be monitored at standard locations to determine the presence of native fish. The monitoring will occur within the newly created channels in Years 2¹, 3, 5, 7, and 10, or until juvenile salmonids are documented on the site. Sampling will take place two times per month from February through May in each monitoring year until juvenile salmonids are documented within the created channels. The timing of fish monitoring is subject to weather and other ecological factors and may change based on field conditions. During fish monitoring, habitat conditions will be recorded, including shade, cover, depth, substrate, and water quality (including water temperature, dissolved oxygen, turbidity). Water quality measurements should be taken where fish monitoring occurs and at locations in the Willamette River and Multnomah Channel adjacent to the Project site. During fish surveys, occurrences of aquatic plants will be noted by species, location, and relative abundance. All potential permits necessary for the authorization of fish sampling will be acquired from the appropriate regulatory agencies. Sampling methods will adhere to all permit conditions.

¹ The Year 1 fish surveys were delayed until Year 2 (2017).

Monitoring will be conducted using one or more of the following: snorkel surveys, visual shoreline surveys, or underwater surveys using a GoPro camera. Beach seining was used for the first monitoring event, but since a salmonid was captured, beach seining will no longer be conducted.

8. OTHER WILDLIFE MONITORING

- Bald eagle and osprey monitoring
 - Monitoring will take place in Years 3, 5, 7, and 10, once per week from mid-December through August. Although these surveys are targeting bald eagle, other raptor sightings (including osprey) and behavior will also be recorded.
- Investigate potential bald eagle and osprey nests
 - During site visits, all potential bald eagle and osprey nests will be identified and the location recorded with a GPS. Using binoculars or spotting scopes, the nest will be observed until it can be determined if it is actively being used, and by what type of bird. This information will be recorded and the nest will be documented for future visits.
- Bird assemblages including diversity and abundance
 - Bird monitoring will be completed in Years 2², 3, 5, and 10. The point counts will be done on transects established during pre-construction monitoring. These transects will be monitored once a month in April, May, and June.
- Mink
 - Mink usage monitoring will take place along the waterways of the Restoration Project including a 50-foot buffer from each waterway in the spring and summer in Years 3, 5, 7, and 10. Survey methods include camera traps at three locations with scent stations to lure animals into camera view. Searches for tracks, scat, and den sites should also occur in designated areas with potential for mink use and shall be conducted during camera trap data collection and maintenance or at least twice a month. Monitoring should take place for at least 12 weeks of spring/summer.
- Pacific lamprey
 - Lamprey monitoring will be conducted as part of a Harbor-wide monitoring effort done by USFWS staff in accordance with the Lamprey Monitoring Plan developed by the Trustees.

During monitoring efforts for specific species, any observation or sign of other Target Species will be documented.

² Year 1 bird assemblage surveys were delayed until Year 2 (2017).

III. PERFORMANCE STANDARDS

Performance Standards for the Project are below. This information is from the Alder Creek Restoration Plan, Exhibit B-1 (Habitat Development Plan), Section 5.3.

Performance standards have been created for the following habitat parameters:

- Hydrology
- Geomorphic/structural features
- Vegetation
 - Emergent marsh
 - Shrub-scrub and riparian (ACM)
 - Riparian forest and cottonwood-dominated upland forest
 - Oak-dominated upland forest
 - Invasive plant species
- Permanent protection

A. HYDROLOGY

A visual survey will be conducted (on foot or by boat) of the created channels and the connections to the Multnomah Channel and the Willamette River in Years 2, 3, 5, 7, 10. The following performance standards will be used to demonstrate the success of newly created hydrologic connections:

- Constructed side channels and ACM (beach, mudflat, emergent marsh, and riparian scrub-shrub/forest) will flood (i.e., filling and partially or completely draining) in response to fluctuations in the daily tidal regime and seasonal river stages in the Willamette River and Multnomah Channel;
- Connections shall remain open (not blocked or clogged with debris or sediment to the extent that it prevents hydrologic connectivity to the Willamette River and Multnomah Channel; and
- Created and enhanced emergent marsh and riparian wetland areas will remain flooded, ponded, or saturated for a duration of time sufficient to maintain wetland hydrology (i.e. 14 or more consecutive days) or show reliable Group A or B primary wetland hydrology indicators as described in the Regional Supplement to the Corps of Engineers Wetland Delineation manual: Western Mountains, Valleys, and Coast Region (Version 2.0, May 2010).

B. GEOMORPHIC/STRUCTURAL/HABITAT COMPLEXITY ELEMENTS

This performance standard will use topographic surveys, aerial photography, hydrology, and visual site inspections to verify that the total quantity of ACM and side channel habitat is being maintained, that there are no barriers to fish entering or exiting the side channel, and that structural habitat features were installed as designed and are being retained.

A minimum of 24 pieces of large woody debris (“LWD”) will be installed within the active channel margin (i.e., along the created channels and within the marsh, mudflat, and scrub-shrub habitats). LWD will be from onsite sources. Performance for LWD will be based on retention of pieces and/or natural recruitment, and the following standards will be used:

Years 2, 3, 5, 7, and 10: woody debris will have an 80 percent retention rate including naturally recruited material (i.e., the site will have at least 19 pieces of LWD).

If the amount of large wood on-site fails to meet performance standards in Years 2, 3, 5, 7 or 10 and if existing conditions and hydraulics will allow the retention of replacement materials, LWD will be installed in the interior channels (and marsh/mudflat where appropriate) to achieve the targeted density.

In the forested areas above the OHWL (non-ACM habitats), habitat complexity elements in the form of debris piles, downed wood/logs, and rock piles will be installed at a minimum of one feature for every one acre (for a total of twenty-nine). Out of the 29 elements, at least one but no more than five will be rock piles. All habitat complexity elements will be created from onsite sources.

A minimum of four snags will be installed on the Project site with at least one installed within the upland habitat behind the levee. The snags will be created from onsite sources.

Additional performance standards include:

- During years 1, 3, 5, 7, 10, topographic surveys will be completed once a year after the wet season to document changes in site topography and structural habitat features.
- Annual inspection to document any fish barriers.
- Aerial photos of the site will be collected once during later summer during years 1, 3, 5, 7, 10.
- Water level data loggers will be placed at a minimum of two locations and continuous data will be collected, as feasible. If determined that continuous monitoring is not feasible, an alternative monitoring schedule will be determined in consultation with the Trustee Council representatives.

The following changes at the site would trigger a project review with Trustee Council representatives to determine what, if any, adaptive management actions are necessary:

- Identification of any fish passage barriers.
- Changes of more than 10% in ACM and side channel habitat acreages from the as-built surveys.
- Changes of more than 20% in side channel depths from the as-built surveys. Channel depths will be measured from the OHWM.

C. VEGETATION

Establishment of native vegetation at the Project is anticipated to result from both active planting and volunteer recruitment. Invasive plant species will be based on the current Oregon Department of Agriculture (ODA) Noxious Weed list and the Portland Plant List (September 2011). Invasive species for the purposes of performance evaluation include the following:

- Reed canarygrass
- Species on the ODA Noxious Weed list
- Species on the Portland Plant List, Rank A and Rank B
- Tree and shrub species on the Portland Plant List, Rank C
- Traveler's joy (*Clematis vitalba*) on the Portland Plant List, Rank C

The most recent versions of the ODA and City of Portland lists will be used. All lists described above will serve as a tool to identify and target species for treatment. Performance standards for native habitats and certain invasive species are described below.

Emergent Marsh

The following performance standards will be used to assess the successful establishment of emergent marsh vegetation:

Year 5:

Cover:

- $\geq 30\%$ native herbaceous
- $\leq 10\%$ invasive herbaceous (excluding reed canarygrass)

Years 7 and 10:

Cover:

- $\geq 40\%$ native herbaceous
- $\leq 10\%$ invasive herbaceous (excluding reed canarygrass)

Emergent marsh monitoring will occur in Years 2, 3, 4, 5, 7, and 10; however, the purpose of the monitoring conducted in Years 2, 3, and 4 is to identify the native and non-native herbaceous cover to gauge whether or not the site appears to be on a trajectory towards meeting the performance standards for Year 5.

Riparian Scrub-shrub and Riparian Forest (ACM)

The following performance standards will be used to assess successful riparian scrub-shrub and riparian forest vegetation establishment.

Years 2-5:

- A minimum of 1,200 native woody stems per acre
- At least 5 native woody species (for Riparian Scrub-Shrub within the ACM)
- At least 3 native tree species and 5 native shrub species (for Riparian Forest within the ACM)
- Cover (during the first 5 years, woody species will be excluded from percent cover):
 - $\geq 10\%$ native herbaceous
 - $\leq 10\%$ invasive herbaceous (excluding reed canarygrass)
 - $\leq 10\%$ invasive shrubs

Year 7:

Cover:

- $\geq 55\%$ native woody species
- $\geq 10\%$ native herbaceous
- $\leq 10\%$ invasive herbaceous (excluding reed canarygrass)
- $\leq 5\%$ invasive shrubs

Year 10:

Cover:

- $\geq 80\%$ native woody species
- $\geq 10\%$ native herbaceous
- $\leq 5\%$ invasive herbaceous and shrubs (excluding reed canarygrass)

Volunteer recruitment of native shrubs and trees in the riparian scrub-shrub and forest planting areas may be credited towards the density per acre performance standard. If the density rates fall below the required performance standards, the Restoration Implementer will consult with the Trustee Council or its designee(s) regarding the precise plan for replanting. Replanting will be conducted during the appropriate season following monitoring. Beyond Year 5, mortality rates are expected to be minimal given the ideal conditions present at the Project for riparian vegetation, and natural succession of the plant community is

anticipated to direct long-term habitat development. Mortality due to beaver herbivory is addressed below.

Riparian Forest and Cottonwood-dominated Upland Forest

While the riparian forest (which is within the 100-year historic floodplain, above the OHWL, and waterward of the SIDIC levee) and the cottonwood-dominated upland forest (which is outside the 100-year historic floodplain, above the OHWL, and landward of the SIDIC levee) represent two distinct areas on the site, they have been combined for the purposes of performance standards and monitoring. The following performance standards will be used to assess successful vegetation establishment within the riparian forest and cottonwood-dominated upland forest (above the OHWL).

Years 2-5:

- A minimum of 1,200 native woody stems per acre
- At least 3 native tree species and 5 native shrub species
- Cover (during the first 5 years, trees/shrubs will be excluded from percent cover):
 - $\geq 10\%$ native herbaceous
 - $\leq 10\%$ invasive herbaceous (excluding reed canarygrass)

Year 7:

Cover:

- $\geq 50\%$ native woody species
- $\geq 10\%$ native herbaceous
- $\leq 10\%$ invasive herbaceous (excluding reed canarygrass)
- $\leq 5\%$ invasive shrubs

Year 10:

Cover:

- $\geq 80\%$ native woody species
- $\geq 5\%$ native herbaceous
- $\leq 5\%$ invasive herbaceous and shrubs (excluding reed canarygrass)

Volunteer recruitment of native trees and shrubs in the riparian forest and cottonwood-dominated upland forest planting areas may be credited towards the density per acre performance standard. If the density rates fall below the required performance standards, the Restoration Implementer will consult with the Trustees regarding the precise plan for replanting. Replanting will be conducted during the appropriate season following monitoring. Beyond Year 5, mortality rates are expected to be minimal given the ideal conditions present at the Project for riparian vegetation, and natural succession of the plant community is anticipated to direct long-term habitat development.

Oak-Dominated Upland Forest

The following performance standards will be used to assess successful oak-dominated upland forest vegetation establishment.

Years 2-5:

- A minimum of 500 trees/shrubs per acre
- At least 1 native tree species and 4 native shrub species
- Cover (during the first 5 years, trees/shrubs will be excluded from percent cover):
 - $\geq 25\%$ native herbaceous
 - $\leq 15\%$ invasive herbaceous (excluding reed canarygrass)
 - $\leq 15\%$ invasive shrubs

Year 7:

Cover:

- $\geq 25\%$ native woody species
- $\geq 25\%$ native herbaceous
- $\leq 10\%$ invasive herbaceous (excluding reed canarygrass)
- $\leq 5\%$ invasive shrubs

Year 10:

Cover:

- $\geq 40\%$ native woody species (at least 10% of woody species cover will be provided by oaks)
- $\geq 25\%$ native herbaceous
- $\leq 5\%$ invasive herbaceous and shrubs (excluding reed canarygrass)

Volunteer recruitment of native trees and shrubs in the oak-dominated upland forest planting areas may be credited towards the density per acre performance standard; however, very little natural recruitment is expected to occur. If the density rates fall below the required performance standards, the Restoration Implementer will consult with the Trustee Council or its designee(s) regarding the precise plan for replanting. Replanting will be conducted during the appropriate season following monitoring. Five years after planting, mortality rates are expected to be minimal given the ideal conditions which are present at the Project for oak-dominated upland forest vegetation, and natural succession of the plant community is anticipated to direct long-term habitat development.

Beaver Herbivory

A total of 10% of the woody plantings are expected to be lost to beaver herbivory (which equals 200 per acre since we are planting 2,000). During woody species density monitoring events, all live stems will be counted. In addition, all beaver-chewed stems resulting in mortality will be counted and documented as such.

If beaver herbivory is causing more than 10% mortality, the Restoration Implementer will notify the Trustee Council or its designee(s). Any beaver-chewed stems (resulting in mortality) beyond the 10% expected to be lost to beaver herbivory will be counted and added to the surviving tree/shrub number. If the resulting density is above 1,200 stems per acre, the performance standard will be considered met for that particular year. However, in order to continue on a trajectory towards meeting cover standards in Year 7, replanting efforts will be conducted in the year following monitoring if less than 1,200 live native woody species per acre were documented. No more than two replanting efforts, specifically in response to beaver herbivory, will be conducted in five years. (Additional replanting efforts may be appropriate if plant mortality from other factors are at fault and those efforts will not be counted toward beaver herbivory replanting efforts.) Generally, these replanting efforts will consist of 25 percent of the original planting density and will be concentrated in the areas of lowest survival, however actual replanting percentages and strategies (e.g., plant species selections, planting configurations, etc.) will depend on the extent of beaver damage and other sources of mortality, and what the Restoration Implementer calculates is necessary to be able to meet future performance standards.

To the extent practicable, species least desirable to beaver will be used in the replanting effort to discourage beaver herbivory. If, after 2 replanting efforts within 5 years, beaver herbivory continues to be a significant problem to the point that the site may not meet the cover standards in Years 7 and 10, the Trustee Council or its designee(s) will be consulted and either beaver trapping (with approval from the Trustee Council or its designee(s)) will be implemented or cover performance standards for Years 7 and 10 will be adapted to accommodate the rate of beaver herbivory occurring on the site.

Invasive Plant Species Management

It is anticipated that invasive species in the marsh habitats will be managed by the establishment and proliferation of native plants following restoration activities. As previously mentioned, invasive species in this Plan are defined as the following: reed canarygrass; species on the ODA Noxious Weed list; species on the Portland Plant List, Rank A and Rank B; tree and shrub species on the Portland Plant List, Rank C; and traveler's joy (*Clematis vitalba*) on the Portland Plant List, Rank C. In the riparian areas and the upland forest, invasive species will be controlled during the Establishment Period. Primary methods of removing or controlling invasive plant species include: hand or mechanical removal and chemical treatment. These management techniques are discussed in detail below.

- **Hand/Mechanical Removal for Invasive Pest Plant Management:** Hand removal, use of small hand powered or handheld equipment (such as a Weed Wrench or a chainsaw), and mechanical methods (use of larger equipment with motors such as a small tractor with a mower or harrow) will be the preferred methods for the removal of invasive pest plant species from the Project. The Trustee Council or its designee(s) does not to be notified if removal will be done by hand, hand-held equipment, mower, or tractor.
- **Herbicides:** In some instances (i.e., extensive, severe, or persistent infestations), it may be necessary to use herbicides to control invasive plant species. All herbicides will be applied according to label instructions and will typically be applied using a low pressure spray. All herbicide applications will be conducted by a licensed pesticide applicator following all label instructions, in compliance with Oregon State laws, and in compliance with the permits and authorizations obtained for the Project. For areas where invasive plants are growing within desirable vegetation, herbicide will be applied using a backpack sprayer with a hood to minimize drift. No applications will be done within fifteen feet of any surface water.

The goal of reed canarygrass control is to keep it from outcompeting the woody plantings in order to give the native plantings the competitive advantage. Specific performance standards developed for reed canarygrass and zero-untreated species are detailed below. General invasive species standards are detailed above under each vegetation type.

Reed Canarygrass

Because this species is known to be very difficult to control in wetland habitats and it is uncertain how each habitat type will be affected by colonization of reed canarygrass, performance standards specific to reed canarygrass cover have been developed and pulled out separately, and cover values will be averaged across the Project site.

Cover:

- Years 1-5: $\leq 30\%$ reed canarygrass
- Year 7: $\leq 25\%$ reed canarygrass
- Year 10: $\leq 20\%$ reed canarygrass

Zero-Untreated Species

All individual plants of the following species will be treated within the year in which they are found, during the season that is most effective for control with reasonably aggressive, legal treatment with the goal of complete eradication:

- Japanese knotweed
- Giant knotweed
- Himalayan knotweed
- Yellow flag iris
- Butterfly bush
- Purple loosestrife

D. PERMANENT PROTECTION

Prior to the end of the 10-year Performance Period, the Project will be permanently protected with a conservation easement. In addition, a long-term management and maintenance endowment fund account will be established and funded up to a previously determined target amount. Long-term activities covered by this fund include, but are not limited to, the following: maintenance, monitoring, remediation, management, debris removal if hydrologic function is impaired, and removal of invasive vegetation impairing habitat function.

IV. HABITAT MONITORING DATA/RESULTS

The only formal monitoring and performance standard for Year 9 on the Alder Creek Project was a visual inspection to document any fish barriers.

A. MONITORING RESULTS

1. AERIAL PHOTO INTERPRETATION

Aerial photography was not required for Year 9. Aerial photography will be conducted in Year 10 (2025).

2. PHOTO DOCUMENTATION

Photo documentation was not required for Year 9. Photo-documentation will be conducted during Year 10 (2025).

3. HYDROLOGY AND GEOMORPHOLOGY

While no hydrology monitoring was required in Year 9, informal visual surveys in 2024 indicated that there has not been erosion, washouts, or sedimentation that would lead to significant changes in elevations on site. To document the geomorphology of the site, annual visual inspections to document any fish barriers are required. Visual surveys conducted in October confirmed that there were no fish passage barriers that could prevent fish from entering or exiting the site. Annual visual inspections will continue in Year 10 along with all other Hydrology and Geomorphology monitoring required to be conducted in Year 10.

4. NATIVE VEGETATION

Emergent Marsh

No vegetation monitoring of the emergent marsh was required on the Project in Year 9. Vegetation monitoring of the emergent marsh will be conducted in Year 10 (2025).

Riparian Scrub-Shrub and Riparian Forest (ACM)

No vegetation monitoring was required within the riparian scrub-shrub and riparian forest with the ACM on the Project in Year 9. Formal vegetation monitoring will be conducted in Year 10 (2025).

Riparian Forest and Cottonwood-Dominated Upland Forest

No vegetation monitoring within the riparian forest and cottonwood-dominated upland forest on the Project was required in Year 9. Vegetation monitoring of the riparian scrub-shrub and riparian forest (ACM) will be conducted in Year 10 (2025).

Oak-Dominated Upland Forest

Monitoring of the oak-dominated upland forest was not required in Year 9. Formal vegetation monitoring of the oak-dominated upland forest will be conducted in Year 10 (2025).

5. LARGE WOODY DEBRIS AND OTHER HABITAT FEATURES

Large woody debris monitoring was not required in Year 9. Large woody debris monitoring will be conducted in Year 10 (2025).

6. INVASIVE SPECIES MONITORING

Invasive species monitoring was not required in Year 9. Invasive species monitoring will be conducted in Year 10 (2025).

Wildlands' Land Management staff regularly visited the Project site during 2024 to assess the site for invasive plant species and treat them (either by hand pulling, digging, mowing, or weed whacking) as necessary. During 2024, invasive species removal primarily consisted of hand removal of yellow flag iris, Scotch broom, and a few purple loosestrife and Indigo bush (*Amorpha fruticosa*) individuals. All instances of these species were removed. No giant knotweed, Himalayan knotweed, or butterfly bush were observed on the Project site.

Reed Canarygrass

Reed canarygrass was treated aggressively in the years prior to construction. No monitoring for reed canarygrass was required in Year 9; however, the site was assessed numerous times throughout the year and reed canarygrass was treated as necessary. Reed canarygrass monitoring will be conducted in Year 10 (2025).

7. FISH MONITORING

Fish monitoring was not required in Year 9. Fish monitoring will be conducted in Year 10 (2025).

8. OTHER WILDLIFE MONITORING

Bald Eagle

Bald eagle monitoring was not required in Year 9. Bald eagle monitoring will be conducted in Year 10 (2025).

Bird Assemblage Surveys

Bird assemblage surveys were not required in Year 9. The next bird assemblage surveys will be conducted in Year 10 (2025).

Mink Surveys

Mink surveys were not required in Year 9. Mink surveys will be conducted in Year 10 (2025).

Lamprey Surveys

Lamprey surveys were not conducted in Year 9. The next lamprey surveys will be conducted by U.S. Fish and Wildlife in Year 10 (2025).

9. GENERAL INSPECTIONS

Regular site visits were conducted in 2024 by Wildlands' biologists, land management specialists, and independent contractors. These site visits were for a variety of purposes including invasive species management, trash removal, sign installation and maintenance, assessment of overall vegetation health, and other maintenance and management tasks. Please see the Maintenance Activity Log in **Appendix 1** for further information. Occasional trespass continues to occur from both the river and the access road. No damage was done to the Project site. On several occasions, small boat craft including kayaks and canoes have been observed in the created channels. Trash and other non-natural debris that floats in when water levels are high are periodically collected and disposed of by Wildlands' staff during site visits.

V. HABITAT MONITORING CONCLUSIONS

The only monitoring required for Year 9 was a visual inspection to document any fish barriers. In Year 9, visual inspection of the site occurred in October to document any fish barriers; however, no fish barriers were detected during the inspection.

VI. FINANCIAL OPERATION

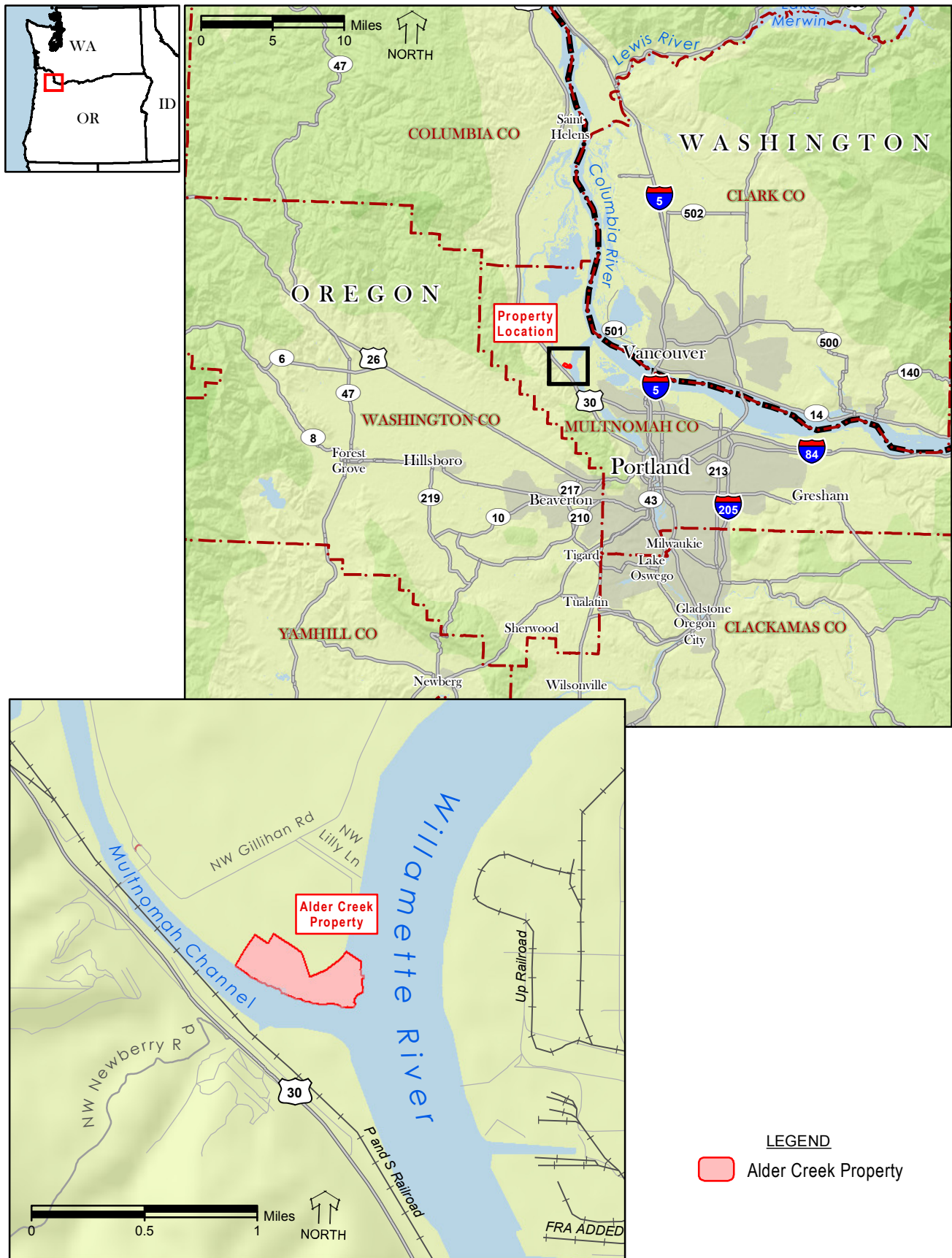
- Construction Security – The Performance Bond #22BSBCN8032 in the amount of \$2,757,472.00 was posted on January 28, 2015 and provided to the National Oceanic and Atmospheric Administration. Following approval of the as-built drawings, NOAA prepared a letter on January 31, 2017 asking the bonding company to release the bond. The bond was released in February of 2017.
- Interim Management and Contingency Security – An irrevocable Letter of Credit in the amount of \$457,288 was issued on January 26, 2015 and is still in place.
- Trustee Council Oversight Funding –Year 10 funding in the amount of \$ \$31,319.25 was provided on December 4, 2024.
- Lamprey Monitoring Funding – No lamprey monitoring was conducted in Year 9 so no funding was required.

A. TRANSFER OF CREDITS AND ENDOWMENT FUND DEPOSITS

A copy of the Credit Ledger documenting Credit sales through December 2024 is included in **Appendix 2**. Following the first release of credits on February 25, 2015, there was one credit sale of 35 credits to the City of Portland on March 23, 2015. The second release of credits occurred on December 1, 2017 and a partial third release of credits occurred on August 27, 2020. No credits were sold in Years 1 through 8 (2016-2023). In 2024, the Trustees, using a private auction company, held a reverse auction to purchase credits with \$2 million in bankruptcy funds. As a result of the reverse auction held in January 2024, 20.97 credits were sold to the Portland Harbor Trustees. To date, a total of 55.97 credits have been sold from the Alder Creek Restoration Project.

The endowment amounts corresponding to the sales in 2015 and 2024 total \$49,284.38, which has been set aside for the endowment fund for the Project. The required endowment principal in the Alder Creek Restoration Plan is \$323,250 and is funded by credits sales with \$862 of each credit sold going towards the endowment until it is fully funded. A total of \$273,965 of the endowment principal remains to be funded.

Figures

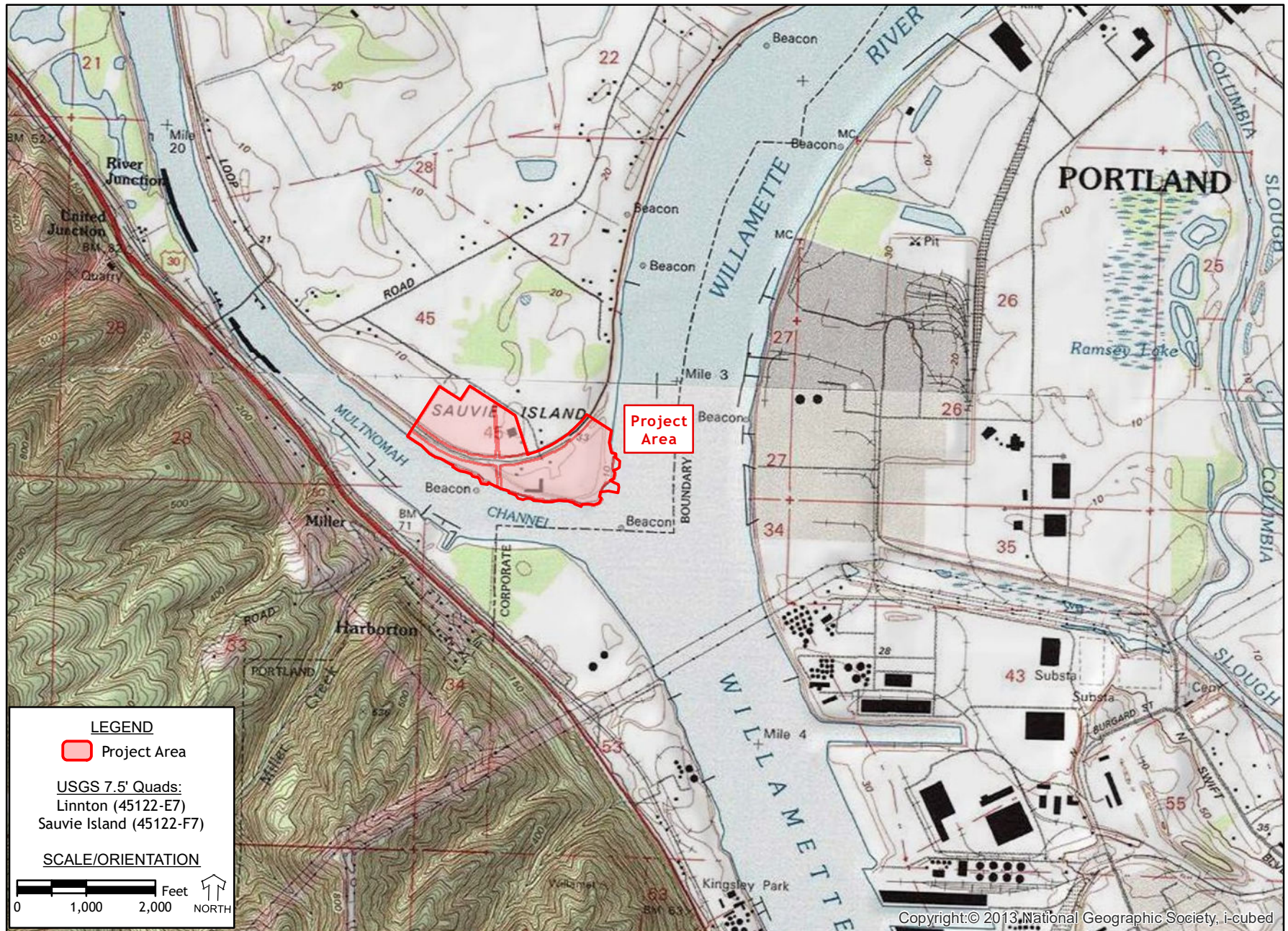


WILDLANDS

Alder Creek Restoration Project
2024 Monitoring Report

Figure 1
Location Map





WILDLANDS

Alder Creek Restoration Project
 2024 Monitoring Report

Figure 2
 USGS Quad





APPENDIX 1

Maintenance Log

Alder Creek NRDA Bank
2024 (Year 9)
Maintenance Log

Visited By: (Name/Initials)		Primary Purpose of Visit	Signage	Trash & Trespass		*Invasives	Other
Visit Date:							
04/01/24	Roper	General Inspection	Checked	Checked	Checked		
06/10/24	Roper	Biological Inspection	Checked	Checked	Checked		
06/10/24	LM Crew	Maintenance/Land Management	Checked	Checked	Treated/Removed		
06/11/24	Roper	Maintenance/Land Management	Checked	Checked	Treated/Removed		
06/11/24	LM Crew	Maintenance/Land Management	Checked	Checked	Treated/Removed		
06/12/24	LM Crew	Maintenance/Land Management	Checked	Checked	Treated/Removed		
06/13/24	LM Crew	Maintenance/Land Management	Checked	Checked	Treated/Removed		
06/14/24	LM Crew	Maintenance/Land Management	Checked	Checked	Treated/Removed		
06/24/24	P. Stephens	Maintenance/Land Management	Checked	Checked	Treated/Removed		Dike Mowing
06/25/24	P. Stephens	Maintenance/Land Management	Checked	Checked	Treated/Removed		Dike Mowing
06/26/24	P. Stephens	Maintenance/Land Management	Checked	Checked	Treated/Removed		Dike Mowing
07/08/24	Roper	General Inspection	Checked	Checked	Checked		
07/08/24	LM Crew	Maintenance/Land Management	Checked	Checked	Treated/Removed		
07/09/24	Roper	General Inspection	Checked		Treated/Removed		
07/09/24	LM Crew	Maintenance/Land Management	Checked	Checked	Treated/Removed		
07/10/24	LM Crew	Maintenance/Land Management	Checked	Checked	Treated/Removed		
07/11/24	LM Crew	Maintenance/Land Management	Checked	Checked	Treated/Removed		
07/12/24	LM Crew	Maintenance/Land Management	Checked	Checked	Treated/Removed		
08/12/24	LM Crew	Maintenance/Land Management	Checked	Checked	Treated/Removed		
08/13/24	Roper	Maintenance/Land Management		Checked	Checked		
08/13/24	LM Crew	Maintenance/Land Management	Checked	Checked	Treated/Removed		
08/14/24	LM Crew	Maintenance/Land Management	Checked	Checked	Treated/Removed		
08/15/24	LM Crew	Maintenance/Land Management	Checked	Checked	Treated/Removed		
08/16/24	Roper	Agency/Easement Holder Visit		Checked	Checked		Photo point monitoring. Ortho photo flight.
08/16/24	LM Crew	Maintenance/Land Management	Checked	Checked	Treated/Removed		
09/16/24	Roper	Biological Monitoring	Checked	Checked	Checked		Marsh monitoring
10/15/24	Roper	General Inspection	Checked	Checked	Checked		Marsh ortho mosaic
10/16/24	Roper	General Inspection	Checked		Checked		Ortho mosaic photo of marsh. Downloaded data loggers/barologger

*invasive plant treatment/removal primarily consisted of hand removal of yellow-flag iris. Scott's broom, Himalayan blackberry, English hawthorn and isolated occurrences of purple loosestrife.

APPENDIX 2

Credit Ledger

ALDER CREEK RESTORATION PROJECT CREDIT INVENTORY LEDGER								
Date of Transaction	Alder Creek Contract No.	Credit Purchaser Name Address Phone Number Contact	Reference Number (if applicable)	734.2 Total DSAYs Authorized ¹			Accepted for use in a Settlement? Y/N	Endowment Amount
				# Released for Sale	# Sold and Debited ²	# Remaining for Sale		
2/25/2015	n/a	15% Initial Credit Release (Deed Restriction & Securities)	n/a	112.45		112.45	n/a	\$ -
3/23/2015	ACRP-15-01	City of Portland 1221 SW Fourth Ave., Room 430 Portland, OR 97204 Jan Betz, (503) 823-4047	n/a		35.00	77.45	N	\$ 30,819.25
12/1/2017	n/a	35% Second Credit Release (As-Built Drawings)	n/a	255.01		332.46	n/a	\$ -
8/27/2020	n/a	Partial 30% Third Credit Release (Year 2 Performance)	n/a	176.00		508.46	n/a	\$ -
3/20/2024	ACRP-24-02	Portland Harbor Trustee Council c/o NOAA Restoration Center 1201 NE Lloyd Blvd. Portland, OR 97232 Lauren Senkyr, (503) 347-0848	n/a		20.97	487.49	Y	\$ 18,465.13
		<i>Total Number of Credits Credited/Debited</i>		543.46	55.97			
		Total Number of Remaining Credits Available for Sale				487.49		\$ 49,284.38

¹A modified total of 734.2 DSAYs are subject to the Credit Release Schedule (Exhibit E of the Restoration Plan)

²Any mitigation requirement specified as an acreage amount shall be deducted from the available Credits/DSAYs at a ratio of 1 acre = 14.43 Credits/DSAYs.