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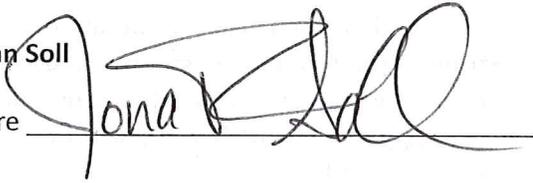
Approvals for Site Conservation Plan

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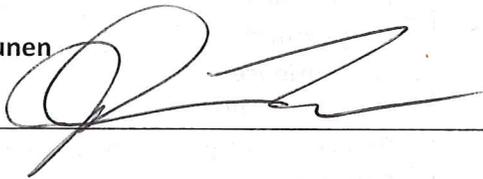


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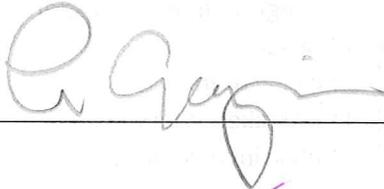


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5/4/2016

SITE CONSERVATION PLAN

Bakers Ferry Natural Area



June 2016



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SECTION 1: INTRODUCTION

CONTEXT

Bakers Ferry Natural Area, a conservation easement, is located on the Clackamas River, a tributary to the Willamette River, at approximately river mile 10. The Clackamas River supplies drinking water to over 200,000 people and supports significant runs of federal and state listed fish species, including Chinook (*Oncorhynchus tshawytscha*) and Coho salmon (*Oncorhynchus kisutch*), steelhead trout (*Oncorhynchus mykiss*), cutthroat trout (*Oncorhynchus clarki*), bull trout (*Salvelinus confluentus*) and Pacific lamprey (*Lampetra tridentate*). Bakers Ferry Natural Area's native habitats include stream channels, floodplains, and riparian and upland forests that support diverse populations of native fish and wildlife.

The Clackamas River Basin has been used by people for thousands of years. The Bakers Ferry Natural Area is reported to be within the traditional territory of the Clackamas, a Chinookan-speaking tribe who lived on the Willamette River near Willamette Falls, along the Clackamas River, and on nearby tributary streams. French and English fur traders began to explore the area in the early 1800s bringing diseases which decimated tribes in the Pacific Northwest. Oregon City was founded in 1829 at Willamette Falls to take advantage of the water power to run a lumber mill. Additional use of the area followed including for transportation, commodity extraction and human settlement. Much of the land surrounding Bakers Ferry Natural Area is currently used for agriculture, nurseries, private forestland, open space, and rural residences. Metro acquired a conservation easement to establish Bakers Ferry Natural Area in 2014 through the 2006 Natural Areas Bond Measure.

This site conservation plan is a tool for protecting and enhancing the unique characteristics of the site to support native plants, aquatic species, and wildlife habitat. The plan includes an overview of the site's history as well as existing conditions, conservation targets and access objectives. The goal of this plan is to describe a course of action that will protect and enhance the area as an environmental resource for Clackamas County and the Portland metropolitan region. Bakers Ferry Natural Area will be preserved as a historical remnant of the Willamette Valley, providing an ecological showcase of native habitats and wildlife. A salmon-bearing stream and floodplains add value for wildlife and water quality. The area will be maintained and enhanced, to the extent possible, in a manner that is faithful to its original natural condition and important ecological functions. To achieve this goal, this site conservation plan establishes a series of priority objectives, including:

- restoring and maintaining high quality habitat including remnant riparian forests and aquatic habitats
- restoring and enhancing existing streams within the natural area for native aquatic species

PLANNING AREA

This site conservation plan addresses conditions, plans and activities for Metro's current 54.6-acre parcel under ownership plus an additional 5.9 acres owned by the Oregon Department of State Lands, which Metro will manage via a Memorandum of Agreement. Table 1 includes the history of purchases at Bakers Ferry Natural Area. Map 1 in Section 7 shows the location of the site in context

to adjacent townships. Map 2 in Section 7 illustrates the Metro ownership boundary and the roads and streams adjacent to the site.

Table 1: Properties comprising Bakers Ferry Natural Area

PROPERTY	ACRES	BOND	DATE	TAX LOT NO.
Oregon	5.9	N/A	N/A	23E20B 01000
Vandeberghe	54.6	1995	06/30/2014	23E20 00480, 23E20 00400

KEY METRO STAFF AND PARTNERS

Staff

Peter Guillozet, natural resource scientist
Brian Vaughn, natural resource scientist
Chris Hagel, lead natural resource specialist
Justin Cooley, natural resource technician
Dave Elkin, principal parks planner
Laurie Wulf, property and project manager
Tom Heinicke, real estate negotiator

Partners

Portland General Electric –John Esler, Tim Shibahara
Oregon Department of Fish and Wildlife – Todd Alsbury, Susan Barnes
Clackamas Soil and Water Conservation District – Jenne Reische, Sam Leininger
Oregon Department of Agriculture – Kevin Fenn

EXISTING PLANNING DOCUMENTS

Northwest Power and Conservation Council – Willamette Subbasin Plan
Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan
Clackamas River Basin Council – Clackamas River Basin Action Plan
Oregon Department of Fish & Wildlife Comprehensive Wildlife Conservation Strategy
River Island Natural Areas Site Conservation Plan

SECTION 2: EXISTING CONDITIONS

PHYSICAL ENVIRONMENT

Bakers Ferry Natural Area is primarily situated on a floodplain complex, bounded by the Clackamas River on the north, a small tributary channel on the west, Bakers Ferry Road and a terrace on the south. To the east are several rural agricultural properties with similar land use. A disconnected portion of the site is located on an island within the Clackamas River north of the main parcel and is currently owned by the State of Oregon. A side channel of the Clackamas River flows between the Metro and State of Oregon properties and joins the tributary confluence with the Clackamas River in a backwater slough feature.

The portions of the property along the stream channels support mixed conifer and deciduous riparian forests with some upland forests, while the interior portions of the property have mostly

been cleared for agricultural use. Map 8 in Section 7 includes a shaded relief depiction of the topography for the site based on LiDAR elevation data.

The geology of the lower Clackamas River watershed is characterized by volcanic and sedimentary formations that are found between the Cascade Mountains and the Portland Basin. Five major geologic units in the area include two volcanic units (the Sardine aka the Rhododendron Formation and the Boring Lava flows) and three sedimentary units (Troutdale Formation, Sandy River Mudstone and Alluvial deposits). At Bakers Ferry Natural Area, most of the present geologic features are comprised of Quaternary alluvium with some Troutdale Formation mudstone and siltstones also occurring.

The properties of soils found within a watershed influence to a large extent the movement of water through and within the soil layers, as well as the vegetation they support. Information on soils in the soil survey of the Clackamas area is published by the USDA Natural Resources Conservation Service and available online through the web soil survey website. Soil descriptions and percent coverage for Bakers Ferry Natural Area are located in Table 2 and the soils are displayed in Map 9 in Section 7.

Table 2: Mapped soil units, acres, and descriptions for Bakers Ferry Natural Area soil units (derived from Green 1982 and the USDA SCS Web Soil Survey)

MAP UNIT SYMBOL	MAP UNIT NAME	ACRES	PERCENT	DESCRIPTION
3	Amity silt loam	0.4	>1%	Very deep, somewhat poorly drained soils that formed in stratified glacio lacustrine silts.
19	Cloquato silt loam	13.8	23%	Very deep, well drained soils formed in mixed alluvium.
68	Newberg loam	29.2	48%	Very deep, somewhat excessively drained soils that formed in loamy and sandy alluvium from sedimentary and basic igneous rocks.
73	Riverwash	5.3	9%	Sediment transported and deposited by streams.
77B	Salem gravelly silt loam, 0 to 7 percent slopes	0.7	1%	Very deep, well drained soils that formed in loamy alluvium over sandy and gravelly alluvium.
84	Wapato silty clay loam	0.4	>1%	Very deep, poorly drained soils that formed in loamy mixed alluvium.
92F	Xerochrepts and Haploxerolls, very steep	8.4	14%	Deep, well drained soils with moderate to moderately slow permeability.
W	Water	2.4	4%	Open or flowing water.

PRECIPITATION AND HYDROLOGY

Bakers Ferry Natural Area is located at approximately 125 feet NAVD88 elevation in the lower Clackamas River watershed. The climate at the site is typical of the Willamette Valley region, characterized by cool, wet winters and warm, dry summers. The Willamette Valley has a predominant winter rainfall climate, with the typical distribution of precipitation including about 50 percent of the annual total precipitation from November through February, with lesser amounts occurring in the spring and fall, and very little during summer.

Table 3 presents annual climate data weather stations located at Oregon City and Estacada, Oregon, the two closest weather stations to the natural area.

Table 3: Annual climate statistics for the Oregon City and Estacada weather stations from the Western Regional Climate Center

STATION	OREGON CITY (356334)	ESTACADA (3562693)
Average max temp (F)	64.1	62.5
Average min temp (F)	44.5	42.1
Average total precipitation (in)	46.4	57.8
Average total snowfall (in)	4.4	7.1

The Clackamas River emanates from the west side of the Cascade Range and is a large tributary to the Willamette River. The Clackamas River watershed is located in the Willamette Valley physiographic province, a broad alluvial plain that spans the lowlands between the Coast Range and Cascade Range. The watershed is a complex network of underlying soil formation types formed by water, volcanic inputs and continental uplift.

The Clackamas River flows northwesterly for approximately 70 miles from its headwaters in the Cascade Range, then westerly for 10 miles to its confluence with the Willamette River. The total drainage area of the Clackamas River is 942 square miles.

Bakers Ferry Natural Area is located at approximately river mile 10 on the Clackamas River and has a contributing watershed area of approximately 840 square miles. Table 4 provides the hydrological characteristics and peak flow discharges for the Clackamas River in its entirety, and for the area above the natural area.

Table 4: Drainage area and peak discharge statistics for the Clackamas River from OWRD

LOCATION	Drainage area (sq miles)	----- PEAK DISCHARGE (CFS) -----				
		2-yr return period	10-yr return period	25-yr return period	50-yr return period	100-yr return period
Clackamas River	942	34,400	62,200	76,700	87,600	98,600
Clackamas River above Bakers Ferry Natural Area	840	31,000	56,900	70,600	81,100	91,700

The Clackamas River in the Bakers Ferry Natural Area reach is characterized by a moderate gradient (0.4%) semi-confined channel with point and mid-channel gravel bars. The channel exhibits riffle-pool morphology, with occasional glides. Substrate ranges from boulders to silts, but is predominately gravels and cobbles.

A small unnamed tributary runs along the southern and western portion of the site and flows northerly, joining the Clackamas River in a backwatered area located downstream of the island feature. The tributary flows through an undersized culvert located along the site access road which limits continuity of flow and sediment and likely limits upstream and downstream fish passage.

Based on review of National Wetland Inventory lists, mapped wetlands only occur along the state-owned island and side channel edges as shown in Map 10 in Section 7. Wetlands occurring at the site are considered Palustrine wetlands, mostly occurring as Palustrine shrub/scrub or Palustrine shore classes. Palustrine scrub/shrub and Palustrine forested wetlands are characterized by woody species. Typical scrub/shrub wetland plants include willows (*Salix spp.*), red alder (*Alnus rubra*),

and salmonberry (*Rubus spectabilis*). Common forested wetland species include red alder, black cottonwood (*Populus trichocarpa*), Oregon ash (*Fraxinus latifolia*), and western red cedar (*Thuja plicata*). The classification of scrub/shrub or forested wetlands is determined by height of woody vegetation, with forested wetlands classified as vegetation greater than six meters and scrub/shrub classified vegetation less than six meters.

AGRICULTURE AND MAJOR HABITAT TYPES

Bakers Ferry Natural Area is located in the transition zone between the conifer forests of the Cascade Mountains and the oak/prairie grasslands of the Willamette Valley (Ecotrust, 2000).

Today, the site is characterized by three primary habitat and cover types: agriculture, riparian forest and mixed upland forested areas. Additionally, open water and bar formations provide essential habitat for fish and wildlife. A small amount of developed land also occurs along an access road. Table 5 lists the percentages of current cover types present at the site, and Map 4 in Section 7 shows the spatial partitioning of habitat and cover types based on current conditions.

Although much of the site is currently farmed under an agricultural lease, the desired future condition is restored habitat. In the near term, invasive species management will be necessary in non-farmed areas. In the event Metro acquires the neighboring floodplain properties in the future, the combined properties would be large enough to support viable upland and wet prairie habitat. This could include the area currently in agricultural production.

Table 5: Approximate area and percentage statistics for current cover types found at Bakers Ferry Natural Area

OWNER	CURRENT COVER TYPE	ACRE	PERCENT
Metro	Agriculture	31.9	58.42%
	Beaches, bars and mudflats	0.6	1.10%
	Developed (pervious/non ag)	1.1	2.01%
	Open water	2.0	3.66%
	Riparian forest	7.2	13.19%
	Upland forest - mixed	9.2	16.85%
	Upland forest - shrub (stage)	2.6	4.76%
	Metro Total	54.6	100.00%
OR DSL	Beaches, bars, mudflats	0.7	12.00%
	Open water	2.7	45.00%
	Riparian forest	2.5	43.00%
	OR DSL Total	5.9	100.00%

Agriculture

Currently, 58 percent of the site is used for agricultural production, primarily for row crop agriculture. Most of the agricultural production is located on Newberg loam soils, which are characteristically deep and excessively drained soils. Figure 1 provides an aerial view of the agricultural portion of Bakers Ferry Natural Area.



Figure 1. Aerial view to the east showing the Bakers Ferry Natural Area agricultural and riparian areas (outlined in red) adjacent to the Clackamas River.

Riparian forest

Bakers Ferry Natural Area includes approximately ten acres of forested floodplain and riparian habitat. The stream corridor, side channel and island support mixed stands of alder, bigleaf maple (*Acer macrophyllum*), Douglas fir (*Pseudotsuga menziesii*), cedar and cottonwood. Understory vegetation is dominated by salmonberry, vine maple (*Acer circinatum*), blue elderberry (*Sambucus cerulea*), hazelnut (*Corylus cornuta*), skunk cabbage (*Lysichiton americanus*), blackberry (*Rubus armeniacus*) and reed canary grass (*Phalaris arundinacea*). Open water represents almost five acres and includes mainstem river, off channel habitats and a tributary stream.

Riparian vegetation and floodplain forests provide essential habitat for aquatic systems by shading streams, contributing large wood that provides cover and pools for fish, and supplying important nutrients. Riparian habitats occur along streams throughout the Clackamas Basin. Floodplain forests are concentrated along the Clackamas River and larger tributary streams where wide areas are subject to periodic flooding.

Much of the riparian and floodplain forest at Bakers Ferry Natural Area that historically occurred along the tributary and the Clackamas River has been cleared and converted for agricultural purposes. Figure 2 shows the typical riparian corridor conditions along the site.



Figure 2. Typical riparian conditions encountered at Bakers Ferry Natural Area include narrow riparian buffer width and abundant invasive species.

Upland forest

Bakers Ferry Natural Area includes approximately 12 acres of upland forest habitat including mixed upland forest (9.2 ac) and upland shrub stage forest (2.6 ac). These areas are typically associated with the valley walls and slightly elevated portions of the floodplain that are not frequently inundated.

Upland coniferous and mixed conifer/deciduous forests are the dominant habitat of the region. Low elevation Pacific Northwest old growth forests are typically characterized by Douglas fir, western red cedar and western hemlock, often in association with grand fir and hardwood species. Under historical conditions, trees of many of the dominant species lived to be 350 to 750 years old or older and frequently had diameters of eight feet or more (The Intertwine Alliance, 2012a).

Plant and animal use of forests followed the changes in forests over time, with different suites of species dominating depending on forest age, canopy closure and site conditions. Biodiversity is higher in forests where some light reaches the forest floor and where standing and fallen dead wood is ample and of mixed age and size. Forests younger than 60 years dominate western Oregon due to current forestry practices, and the decline of old growth-associated species reflects these changes in overall forest structure across the region (Metro, 2013). Figure 3 includes a picture of vegetation conditions adjacent to the unnamed tributary, including more upland type habitats in the background.



Figure 3. Himalayan blackberry, knotweed and reed canary grass comprise the dominant vegetation along the side channel.

VEGETATION AND WILDLIFE

Historical vegetation and land use

Based on review of historical aerial photographs and General Land Office maps, the site was likely dominated by riparian and wetland forests with patches of upland forest at the higher elevations (Christy et al, 2011). Riparian areas were likely cottonwood gallery forests intermixed with western red cedar, Oregon ash, Pacific willow (*Salix lucida ssp. lasiandra*), grand fir (*Abies grandis*), red alder and big leaf maple (Intertwine, 2012a). Upland forests were likely comprised of mesic mixed conifer forests including Douglas fir, western hemlock (*Tsuga heterophylla*), grand fir, bigleaf maple, Pacific yew (*Taxus brevifolia*), western dogwood (*Cornus nuttallii*), Oregon white oak (*Quercus garryana*) and red alder (Christy et al., 2011). Other trees and shrubs may have included black hawthorn (*Crataegus douglasii*), western serviceberry (*Amelanchier alnifolia*), tall Oregon grape (*Mahonia aquifolium*), dull Oregon grape (*Mahonia nervosa*), mock orange (*Philadelphus lewisii*), blue elderberry, red elderberry (*Sambucus racemosa*), salal (*Gaultheria shallon*), red huckleberry (*Vaccinium parvifolium*), oso berry (*Oemleria cerasiformis*) and snowberry (*Symphoricarpos albus*). Native forbs likely included sword fern (*Polystichum munitum*), licorice fern (*Polypodium glycyrrhiza*), false Solomon's seal (*Maianthemum racemosum*), false lily of the valley (*Maianthemum dilatatum*), trillium (*Trillium ovatum*), fairy bells (*Prosartes hookeri var. oregano*), miner's lettuce (*Claytonia perfoliata*), stinging nettle (*Urtica dioica*) and other species (Christy et al., 2011).

Although the historical General Land Office maps show a large portion of the site listed as upland prairie, these areas may have been located on the terrace above the floodplain and outside of the Metro acquired property. Some seasonally wet prairie may have been present at the site. Map 3 in Section 7 shows the distribution of these vegetation communities based on GIS digitization of historical General Land Office maps.

Humans have been present in the Willamette River basin for around 10,000 years, with approximately 30,000 Native Americans living in the basin prior to settlement. The Clackamas Band, related to the larger Chinookan-language group of the lower Columbia River, were likely the primary residents of the Clackamas River subbasin. Their primary use of the area would have been fishing in the Clackamas River and its tributaries. Patches of heavily burned forests in the area indicate that Native Americans may have used fire to manage the area for hunting and gathering (Ecotrust, 2000).

French and English fur traders began to explore the area in the early 1800s with the first large wave of Euro-American settlers arriving in the 1840s. During the late 1800s and early 1900s, Euro-Americans gradually converted the forested landscape to a patchwork of farms, including cropland, pasture and orchards. Bakers Ferry Natural Area was likely cleared for agricultural production during this time period. In the early 1900s, the development of the railroad accelerated the pace and scope of human uses of the lower Clackamas Valley. Land uses included commodity extraction, farming, timber harvest and human settlement. By the 1950s, large farms began to be subdivided into lots for residential development with most remaining agricultural production shifting to nurseries and Christmas tree farms (Ecotrust, 2000).

Invasive plants

Metro has completed mapping of invasive weeds at the site, but periodic reassessment will be necessary. Invasive species including false brome (*Brachypodium sylvaticum*), garlic mustard (*Alliaria petiolata*), butterfly bush (*Buddleja davidii*), Himalayan blackberry, reed canary grass, English ivy (*Hedera helix*), English holly (*Ilex aquifolium*), vinca (*Vinca minor*) and Japanese or Bohemian knotweed (*Fallopia x bohemicum*) are currently present in the upland and riparian forests and along the farm boundary. The state-owned island is dominated by knotweed, which will require annual treatments for at least ten years.

Wildlife

Upland forests in the greater Portland-Vancouver region provide primary habitat for at least 94 species and are used by at least 129 more species (The Intertwine Alliance, 2012b). Many of these wildlife species, including amphibians, reptiles, birds and mammals use the site for breeding, nesting, foraging and migration. These include hawks, falcons and neotropical migrants such as willow flycatcher and solitary vireo, as well as gallinaceous birds such as ruffed grouse. The western portion of the site has diverse cover, breeding and migration habitats which provide numerous food sources including seeds, fruit, pollen sources, bark and insects. Small and large mammals and birds also provide food for species such as raptors and large predatory mammals including cougar (*Felis concolor*), which are known to occur in the area. Forest habitats could support additional small mammals including Douglas' squirrel (*Tamiasciurus douglasii*) and several bat species. Other possible species for this site include wood rat (*Neotoma spp.*), chipmunks (*Tamias townsendii*), voles (*Phenacomys spp.* and *Microtus spp.*), mice (*Pseudomys spp.*), mink (*Mustela vison*), bobcat (*Lynx rufus*), black bear (*Ursus americanus*), black tail deer (*Odocoileus hemionus*), and elk (*Cervus elaphus roosevelti*).

Typical avian species found with riparian habitats at the site include tree swallow, violet-green swallow, western kingbird and olive-sided flycatcher. Other birds utilizing this habitat may include

green heron, great blue heron, Wilson’s and other warblers, and American goldfinch. Other wildlife species dependent on this habitat type include Pacific tree frog (*Pseudacris regilla*), northern red-legged frog (*Rana aurora*), various salamanders, common garter snake (*Thamnophis sirtalis*), black-tailed deer, elk, black bear, beaver (*Castor canadensis*), coyote (*Canis latrans*) and fox (*Urocyon cinereoargenteus*). Open water ponded areas near the Clackamas River confluence may support migrating waterfowl species and also provide suitable resting habitat for painted (*Chrysemys picta*) and western pond turtles (*Actinemys marmorata*).

Native fish populations

Anadromous fish occurring in the Clackamas basin include spring and fall Chinook and Coho salmon, winter steelhead, non-native summer steelhead, migratory cutthroat trout, and Pacific lamprey (Runyon and Salminen 2005). Most populations of native salmonids in the Clackamas basin have been listed under the Endangered Species Act. Table 6 includes federal and state listing status information for those species.

Table 6: Species of concern present at Bakers Ferry Natural Area and current federal and state listing status

SPECIES	FEDERAL STATUS	STATE STATUS
Coho, Lower Columbia River ESU	Threatened	Endangered
Steelhead, Lower Columbia River ESU	Threatened	Sensitive–Critical
Chinook, Lower Columbia River ESU	Threatened	Sensitive–Critical
Coastal cutthroat trout, SW WA / Columbia R. ESU	Species of Concern	Sensitive–Vulnerable
Pacific lamprey	Species of Concern	Sensitive–Vulnerable

Resident native fish in the Clackamas River include cutthroat trout, rainbow trout (*Oncorhynchus mykiss*) and bull trout. Bull trout, previously eliminated from the basin, were reintroduced in 2011 and observed spawning in 2011-2012 (2013 Allen and Koski). Other resident fish potentially occurring in the project area include reticulate sculpin (*Cottus perplexus*), longnose dace (*Rhynchichthys cataractae*), speckled dace (*Rhynchichthys osculus*), red-sided shiner (*Richardsonius balteatus*), brook lamprey (*Lampetra richardsoni*), suckers (*Catostomus spp.*) and northern pikeminnow (*Ptychocheilus oregonensis*).

Native fish habitat in the mainstem Clackamas River and tributaries is moderately to severely degraded within much of the region. Widespread development and land use activity affect habitat quality and complexity, water quality and watershed processes in lower Willamette River and Columbia River tributaries. Stream habitat degradation is primarily due to past and current land use practices that have affected properly functioning stream channels, riparian areas and floodplains, as well as watershed processes. The Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan identifies the Clackamas River and its tributaries as primary habitat necessary to the recovery of Coho salmon and winter steelhead, and as important contributing habitat for fall Chinook salmon and chum salmon (WRI, 2004).

Although fish population data is lacking for the Bakers Ferry Natural Area, the site includes several features that are likely to contain productive habitats for the above listed species. Gravel bars and vegetated banks located along the river’s edge provide frequently inundated areas that are

important to rearing salmonids throughout the year. The side channel located between the main parcel and the State of Oregon-owned parcel likely supports rearing juveniles during winter months, may support spawning during elevated flows, and provides slow water habitat for resident fish during the summer months. The backwatered portion of the tributary and side channel provide slow water refugia from the main channel velocities and support varying life stages of listed species throughout the year. Interior floodplain areas as well as the off-channel habitat complexes provide excellent potential for rearing habitats during high winter flows.

The unnamed tributary likely has an insufficient volume of water to support many native fish species during the summer and fall months. However, during elevated flows fish likely use the lower portions of the tributary to avoid high velocities in the main channel and to access other areas of the floodplain. Furthermore, the tributary provides delivery of upland derived nutrients to the Clackamas River. Decommissioning the pipe on a nearby private parcel that diverts flow from the tributary upstream of Bakers Ferry Natural Area could increase flow significantly.

RECENT MANAGEMENT HISTORY

Metro acquired Bakers Ferry Natural Area in 2014 and is currently managing invasive species in the forested areas. Most of the floodplain area remains in agricultural production and Metro will increase management efforts in areas bordering the farm field in association with planned restoration at the site. Metro removed the existing barn in 2015.

RESOURCES OF SPECIAL INTEREST

Some rare or special status species that may be found on or approximate to the site may include Pacific lamprey, western brook lamprey, Coho salmon, steelhead, Chinook salmon, bull trout, northern red-legged frog, western toad (*Anaxyrus boreas*), western pond turtle, willow flycatcher and western meadowlark. A cultural resource and archeological survey, *Cultural Resources Survey for the Bakers Ferry Natural Area* (2016), documented the presence of a former Native American settlement in the northeast corner of the site and on the adjacent private property.

SECTION 3: CONSERVATION

CONSERVATION TARGETS

The habitat conservation targets represent major habitat types present at the site. Conservation targets are composed of a species, suites of species, communities, and ecological systems that represent and encompass the full array of native biodiversity of the site, reflect local and regional conservation goals, and are viable or at least feasibly restorable (The Nature Conservancy, 2007). To further advance local scale conservation targets, the Clackamas Basin Action Plan (2005) identifies key strategies to meet limiting factors for fish and wildlife populations in three specific areas: water quality, aquatic and riparian habitat, and wildlife habitat. Key strategies identified by the Clackamas Basin Action Plan for meeting limiting factors applicable to Bakers Ferry Natural Area include:

Water quality

- Increase width of shrub and forested riparian areas.
- Develop buffer strips to capture runoff.
- Reduce soil erosion.

- Encourage alternatives to pesticides.
- Protect mature riparian forests.

Aquatic and riparian habitat quality

- Restore and improve historical side channels and other backwater areas along the river and tributaries.
- Add wood to existing side channels.
- Protect existing high quality floodplain forest and riparian areas.

Wildlife habitat

- Improve and restore key wildlife habitats.
- Improve terrestrial habitats by controlling weeds, vegetation control and planting native vegetation.
- Protect large intact areas comprised of key habitats to promote core areas for habitat connectivity.

Using onsite natural habitat types and regional conservation planning efforts as guides, conservation targets were selected that encompass the site’s biodiversity values and regional conservation priorities and that are feasibly restorable. These conservation targets are:

- Riparian forest
- Upland forest
- Native fish

These targets reflect the historical habitat conditions that likely were present at the site, and these habitat types support the native focal species that presently or previously occupied the site. These target habitats are described briefly in Table 7 and shown on Map 5 in Section 7. Acreages of existing cover types, conservation targets, stewardship types, and management status are presented in Table 8.

Table 7: Current status and desired future conditions of the selected conservation targets

TARGET	CURRENT STATUS	DESIRED FUTURE CONDITION
Riparian forest	Narrow widths, presence of invasive species and relatively simplified stand structure and age class composition. Floodplain areas cleared for agricultural or residential purposes are in poor condition.	A diverse native riparian forest on stream banks and across the re-connected floodplain, with restored upstream-downstream habitat connectivity.
Upland forest	Degraded by invading non-native shrubs and trees, and lacking legacy features typical of old forests: senescent trees, snags and downed wood.	A re-established native shrub layer, with a more diverse stand composition and conditions, including older trees, canopy gaps, snags and downed wood.
Native fish	Most stream channels at the site lack instream cover, pool habitat, and are subjected to degraded water quality. Lack of riparian buffer along tributary to provide shade and detrital inputs.	Abundant instream cover, frequent pool habitat, large wood to retain spawning gravels, connectivity to floodplain and off-channel habitats. Volitional fish passage provided at all times.

Table 8: Corresponding approximate acreages for current cover, conservation targets, stewardship types and management status

CURRENT COVER	ACRES	STEWARDSHIP TYPE	ACRES
Agriculture	31.9	Beaches, bars, and mudflats	1.3
Beaches, bars, and mudflats	1.3	Developed (pervious/non ag)	0.2
Developed (pervious/non ag)	1.1	Open water	4.7
Open water	4.7	Riparian forest	44.3
Riparian forest	9.7	Upland forest - mixed	10.0
Upland forest – mixed	9.2	Total	60.5
Upland forest – shrub stage	2.6		
Total	60.5	MANAGEMENT STATUS	ACRES
		0 - Pre-initiation	60.5
CONSERVATION TARGET	ACRES	1 – Initiation	0.0
Riparian forest	44.3	2 - Establishment	0.0
Upland forest - mixed	10.0	3 - Consolidation	0.0
No target	6.2	4 - Refinement and maintenance	0.0
Total	60.5	9 - No targets (developed)	0.0
		Total	60.5

KEY ECOLOGICAL ATTRIBUTES

Key ecological attributes are the features that define aspects of a conservation target’s biology or ecology that, if missing or altered, would lead to the loss of that target over time (The Nature Conservancy, 2007). KEAs define the conservation target’s viability. They are the biological or ecological components that most clearly define or characterize the conservation target, limit its distribution or determine its variation over space and time. They are the most critical components of biological composition, structure, interactions and processes, and landscape configuration that sustain a target’s viability or ecological integrity. KEAs are rated from poor to good. This rating helps establish the restoration goals and guide Metro in development of restoration actions for the conservation targets.

KEAs and their indicators for the Bakers Ferry Natural Area conservation targets are provided in Tables 9 through 11.

Table 9: Key ecological attributes for riparian forest at Bakers Ferry Natural Area

CATEGORY	KEA	INDICATOR	----- INDICATOR RATING -----				CURRENT RATING	DFC* FOR THIS SCP	LONG TERM DFC	COMMENTS
			POOR	FAIR	GOOD	VERY GOOD				
Size	Riparian forest width	Average width of riparian forest	<15 m (50 ft) each side of stream	15-30 m (50-100 ft) each side of stream	30-61 m (100-200 ft) each side of stream	>61 m (200 ft) each side of stream	Fair	Good	Very Good	Riparian forest structure is generally fair to good along the unnamed tributary stream and fair along the side channel and a portion of the Clackamas River. Some gaps need to be replanted as well as expanding riparian/floodplain forest to the interior floodplain currently in agricultural production. Riparian forest width positively correlates with water and wildlife habitat quality, including biodiversity corridors. Restoration of channel-adjacent flood-prone lands will provide additional riparian forest width.
Condition	Vegetative structure: shrub layer	% native shrub cover	<10% cover	10-25% cover	25-50% cover	>50% cover	Fair	Good	Very Good	Riparian understory is presently dominated by invasive Himalayan blackberry and reed canarygrass, with small patches of English ivy. Clearing of invasive plants, native shrub plantings and periodic maintenance, in combination with native riparian tree re-establishment, could boost native shrub cover.
Condition	Mature trees	Number and size (dbh) of species such as Douglas fir, western red cedar and grand fir	Mature trees lacking	<3 per ac with dbh >24 in	3-5 per ac with dbh >24 in	>5 per ac with dbh >24 in	Fair	Fair	Very Good	Riparian forest structure is generally in fair to good condition along the tributary stream, with poor conditions along the side channel (lack of mature trees) and the interior floodplain.
Condition	Floodwater access to the floodplain; upstream habitat connectivity	Degree of connection between stream/ floodplain during high water events	Extensively disconnected by channel incision, dikes, tide gates, elevated culverts, etc.	Moderately disconnected by channel incision, dikes, tide gates, elevated culverts, etc.	Minimally disconnected by channel incision, dikes, tide gates, elevated culverts, etc.	Completely connected (backwater sloughs, channels)	Good	Very Good	Very Good	Generally, degree of connection between the mainstem river, off-channel habitats, and the floodplain is in good condition at the site. On the unnamed tributary, a manmade berm limits floodplain connectivity, and an undersized culvert on the access road limits flow and sediment continuity.

*Desired future condition

Table 10: Key ecological attributes for upland forest at Bakers Ferry Natural Area

CATEGORY	KEA	INDICATOR	----- INDICATOR RATING -----				CURRENT RATING	DFC* FOR THIS SCP	LONG TERM DFC	COMMENTS
			POOR	FAIR	GOOD	VERY GOOD				
Condition	Mature trees	Number and size (dbh) of species such as Douglas fir, western red cedar, western hemlock and grand fir	Mature trees lacking	<3 per ac with dbh >24 in	3-5 per ac with dbh >24 in	>5 per ac with dbh >24 in	Fair	Good	Very Good	Mature trees lacking in the upland forested areas.
Condition	Vegetative structure: shrub layer	% native shrub cover	<10% cover	10-25% cover	25-50% cover	>50% cover	Fair	Good	Very Good	Invasive species dominate the understory of upland areas.
Condition	Standing and downed dead trees	Average # snags and large wood (>50 cm, or 20 in, dbh) per acre	<5 snags and <5% down wood	5-11 snags and 5-10% down wood	12-18 snags and 10-20% down wood with moderate variety of size and age classes	>18 snags and >20% cover down wood in a good variety of size and age classes	Fair	Fair	Very Good	

*Desired future condition

Table 11: Key ecological attributes for native fish at Bakers Ferry Natural Area

CATEGORY	KEA	INDICATOR	----- INDICATOR RATING -----				CURRENT RATING	DFC* FOR THIS SCP	LONG TERM DFC	COMMENTS
			POOR	FAIR	GOOD	VERY GOOD				
Condition	Complexity of habitat	# of different stream habitat units per 305 m (1,000 foot) reach	<2 habitat units	Between 2-5 habitat units	Between 5-10 habitat units	>10 habitat units	Poor	Very Good	Very Good	Pools provide resting and feeding opportunities for a variety of native fish and other wildlife. Pools also can provide cold water refugia in summer months and low velocity refugia during elevated flows. Pool habitat is lacking in the unnamed tributary.
Condition	Key pieces and # of pieces of large wood in wetted areas of the stream and adjacent streambank	# key pieces and large wood per 305 m (1,000 ft) reach	<10 large wood pieces and 0-1 key pieces	10-20 large wood pieces and 2-5 key pieces	20-40 large wood pieces and 6-10 key pieces	>40 large wood pieces and >10 key pieces	Poor	Very Good	Very Good	Key pieces of large wood greater than 24" are lacking from the unnamed tributary as well as the side channel and backwater areas at the site. These pieces of wood are considered highly important for channel forming processes, pool development, sediment and nutrient retention and for cover for native fish.
Condition	Substrate in wetted areas of stream	% area of fines and gravel substrate per 305 m (1,000 ft) reach	Fines >30% and gravel <10% of area	Fines 20-30% and gravel 10-20% of area	Fines 10-20% and gravel 20-35% of area	Fines <10% and gravel >35% of area	Poor	Fair	Fair	Anticipated restoration actions are unlikely to increase gravel significantly.
Condition	Fish passage	Fish able to move to and from mainstem and tributaries	Complete blockage	Blocked more than half the year	Blocked less than half the year	Passage open year-round	Poor	Very Good	Very Good	An undersized culvert located on the unnamed tributary is undersized and limits fish passage throughout the year.
Condition	Floodwater access to the floodplain	Degree of connection between stream/ floodplain during high water events	Extensively disconnected by channel incision, dikes, tide gates, elevated culverts, etc.	Moderately disconnected by channel incision, dikes, tide gates, elevated culverts, etc.	Minimally disconnected by channel incision, dikes, tide gates, elevated culverts, etc.	Completely connected (backwater sloughs, channels)	Fair	Good	Very Good	Generally, the degree of connection between the mainstem river, off-channel habitats, and the floodplain is in good condition at the site. On the unnamed tributary, a manmade berm limits floodplain connectivity, and an undersized culvert on the access road limits flow and sediment continuity.

*Desired future condition

THREATS

A stress is the “impairment or degradation of the size, condition, and landscape context of a conservation target, and results in reduced viability of the target,” (The Nature Conservancy, 2007) or, in other words, a degraded key ecological attribute that is outside its acceptable range of variation. Stresses may also reduce the viability of nested conservation targets such as grassland birds. A source of stress is an extraneous factor, either human (e.g., policies, land use) or biological (e.g., non-native species) that infringes upon a habitat or species target. Put together, stresses and their sources constitute a threat.

Metro follows The Nature Conservancy’s method of identifying threats at a site. Analysis of threats to conservation targets at Bakers Ferry Natura Area involves three parts:

- Identify stresses and apply stress-rating criteria.
- Identify sources of stress, rank and assign threat-to-system rank.
- Use the combination of stress and source ranks to assign overall threat rank.

Threats for each conservation target are identified and ranked as low, medium, high or very high (Tables 12 through 14). The most severe threats are those that are likely to seriously degrade or destroy a large portion in the next ten years or so, and that we are able to reasonably address. Threats that we have no control over receive low ratings. This method helps identify restoration and stewardship activities that can abate the more severe threats. Threat rankings may change over time, for example if invasive species become a more severe problem in a given conservation target.

CLIMATE CHANGE CONSIDERATIONS

The following section is adapted from the 2013 Metro River Island Site Conservation Plan. Because of the close proximity of the two sites, the effects of climate change will likely be mirrored.

At Bakers Ferry Natural Area, stressors from climate change will likely derive primarily from increased competition from invasive species, intensified summer drought and altered hydrology and water temperature. Altered hydrology may result in flashier streams from more severe winter storms and decreased summer flows from loss of snowpack, reducing or degrading native fish and riparian habitat. However, there could also be potential floodplain benefits from flashier streams; for example, larger floods could inundate floodplains for longer time periods. In forests, drier summer conditions could curtail tree growth and increase the risk of stand-replacing wildfires.

Metro will be vigilant in Early Detection-Rapid Response activities for invasive species, and more staff and financial resources may be needed to deal with invasive species in the future. At the site level, probability of native species persistence will be enhanced by restoration actions that remove or remedy habitat fragmentation (e.g. culvert repair/removal), re-establish and reconnect at-risk native habitats, restore legacy habitat features that serve as refugia (in-stream large wood debris and upland forest snags) and buffer extreme climate events by restoring natural hydrology. The potential for altered hydrology increases the importance of riparian forest health and width, as well as looking at the larger landscape for biological connectivity. Creating and enhancing in- and off-channel habitat in the near future, including increasing the resilience of such habitat elements against altered hydrology, can help enhance native fish habitat.

Table 12: Threats and sources of stress for riparian forest at Bakers Ferry Natural Area

Source of stress		Stresses (rank each as L-M-H-VH for contribution, irreversibility & source)											Threat rank	Comments	
		Habitat destruction/ conversion	Stress rank	Altered composition/ structure ¹	Stress rank	Competition for resources	Stress rank	Human disturbance	Stress rank	Altered hydrology	Stress rank	Impaired habitat connectivity			Stress rank
Development, land conversion	Contribution	High	High									High	Med	High	Undersized access road culvert blocks upstream passage for aquatic fauna. Soil erosion and runoff impacts water quality.
	Irreversibility	Medium										Low			
	Source rank	Medium										Medium			
Invasive species	Contribution					High	High							High	Heavy infestation of Himalayan blackberry and reed canarygrass, with lesser amounts of English ivy, clematis, knotweed and yellow flag iris.
	Irreversibility							Medium							
	Source rank							High							
Human use, dogs, trails, fishing, etc.	Contribution							Low	Low					Low	No trails are present and no human or dog access is currently planned or authorized.
	Irreversibility							Low							
	Source rank							Low							
Diking, filling, draining	Contribution									High	Med			Med	Channel straightening, agricultural drainage and floodplain berms have contributed to altered stream, wetland and floodplain function.
	Irreversibility									Medium					
	Source rank									Medium					
Previous forest management	Contribution			High	Med									Low	Riparian clearing and active farming of outer riparian fringe and flood-prone areas. Lack of downed wood for fish and wildlife habitat.
	Irreversibility							Medium							
	Source rank							Medium							
Climate change	Contribution									High	Low			Low	Potential long-term effects due to alterations in runoff patterns and microclimates.
	Irreversibility									High					
	Source rank									High					

¹Includes lack of down and standing dead wood, poor shrub structure in forest, too much shrub in prairie, etc.

Table 13: Threats and sources of stress for upland forest at Bakers Ferry Natural Area

Source of stress		Stresses (rank each as L-M-H-VH for contribution, irreversibility & source)											Threat rank	Comments		
		Habitat destruction/ conversion	Stress rank	Altered composition/ structure ¹	Stress rank	Competition for resources	Stress rank	Human disturbance	Stress rank	Altered hydrology	Stress rank	Impaired habitat connectivity			Stress rank	
Development, land conversion	Contribution	Medium	Med											Med	Land clearing for farming has led to loss of upland forests and simplified stand structure. Road building adjacent to the site has fragmented upland areas at the site from surrounding habitats.	
	Irreversibility	Medium														
	Source Rank	Medium														
Fire suppression	Contribution		Low	Medium										Low	Wildfire suppression has altered stand composition and structure, leading to a more densely stocked stand with more Douglas-fir and fewer, less viable oaks.	
	Irreversibility			Medium												
	Source Rank			Medium												
Invasive species	Contribution					High	High							High	Encroachment of non-native species may limit upland forest structure and composition.	
	Irreversibility			Med												
	Source Rank			High												
Human use, dogs, trails, fishing, etc.	Contribution							Low	Med					Med	No trails are currently present and no human or dog access is currently planned or authorized.	
	Irreversibility							Low								
	Source Rank							Low								
Previous forest management	Contribution	High	High											Med	Historical land clearing has lead to loss of characteristic elements of old forest: large trees, snags, downed wood, canopy complexity/gaps and high accumulations of soil organic matter.	
	Irreversibility	Medium														
	Source Rank	Medium														
Climate change	Contribution		Low	High										Low	Potential long-term effects from altered forest microclimate, new diseases and pests, as well as altered fire and drought regimes.	
	Irreversibility			High												
	Source Rank			High												

¹Includes lack of down and standing dead wood, poor shrub structure in forest, too much shrub in prairie, etc.

Table 14: Threats and sources of stress for native fish habitat at Bakers Ferry Natural Area

Source of stress		Stresses (rank each as L-M-H-VH for contribution, irreversibility & source)											Threat rank	Comments	
		Habitat destruction/ conversion	Stress rank	Altered composition/ structure ¹	Stress rank	Competition for resources	Stress rank	Human disturbance	Stress rank	Altered hydrology	Stress rank	Impaired habitat connectivity			Stress rank
Development, land conversion	Contribution	Medium	Med									High	High	Med	Simplified stream structure and undersized conveyance structures from previous land use.
	Irreversibility	Medium										Medium			
	Source Rank	Medium										High			
Previous forest management	Contribution	High	High											Med	Historical land clearing has lead to loss of characteristic elements of old forest and recruitment of large wood for instream habitat complexity.
	Irreversibility	Medium													
	Source Rank	Medium													
Climate change	Contribution										Low	High		Low	Potential long-term effects due to alterations in stream flow and microclimates.
	Irreversibility									High					
	Source Rank									High					

¹Includes lack of down and standing dead wood, poor shrub structure in forest, too much shrub in prairie, etc.

PRIORITIZED STRATEGIES TO ADDRESS THREATS

This site conservation plan outlines strategic actions to be carried out at Bakers Ferry Natural Area over the next ten years, based upon short- and long-term goals for the various identified conservation targets. The strategic actions described below are intentionally general in nature and are not highly specific prescriptions. Specific prescriptions will be developed by Metro staff to address site-specific conditions encountered in areas targeted for restoration. Proposed strategic actions to address threats are summarized in Table 15.

Weed management is likely to pose an ongoing challenge for Metro managers, given that invasive vegetation is widespread across the property and the extensive boundary edges bordering adjacent residential and agricultural lands. Annual treatments will be required, at least initially, to keep weed populations suppressed. More intensive treatments will likely be needed to facilitate re-establishment of native shrubs where reed canary grass currently dominates.

Table 15: Threats and actions for key ecological attributes of important conservation targets at Bakers Ferry Natural Area

CONSERVATION TARGET	KEA	THREAT	ACTION(S)	NOTES
All	Species composition and competition	Invasive species	Integrated approach of monitoring, cutting, herbicide spraying and controlled burns.	Will be an ongoing challenge.
Riparian forest	Floodplain connectivity	Land conversion	Remove berms that limit floodplain connectivity. Repair/remove culvert blockage at farm access road crossing.	
Riparian and upland forest	Habitat area	Land conversion	Re-establish native trees and shrubs on portions of area that is currently farmed.	Could be completed in stages, initially focused on near-stream area and expanding outwards over time.

SECTION 4: MANAGEMENT ACTIONS

Restoration actions, anticipated challenges and estimated costs are described in this section and in **Error! Reference source not found.**, below. For several restoration actions, there are options for Metro to stage interventions in order to gage initial success, manage costs and maintain working relationships with leaseholders and neighbors.

INVASIVE SPECIES

Due to the proximity of fringing rural residential and agricultural lands, regular management of invasive species will be necessary to reduce the current extent of invasive species and to address new introductions. In the near term, Metro will continue monitoring and treatment of false brome, garlic mustard, butterfly bush, knotweed, blackberry, ivy, holly, hawthorn and other common agricultural weeds.

Over the medium to long-term, Metro will address threats from new invasive plants through cooperative management agreements with neighboring landowners, and through management of Bakers Ferry Natural Area recreational users to limit the arrival of new weed propagules. Metro will also continue to develop and refine its cooperative weed management activities with partner

agencies and stakeholders and is participating in the Clackamas River Invasive Species Partnership, a multi-partner effort to reduce the threat of invasive species to riparian habitat and water quality in the Clackamas basin. Metro will also engage with the farm leaseholder to ensure farm equipment is not transporting weed materials onto the site, and to consider how the lease agreement could help serve and implement the restoration plan.

RIPARIAN FOREST AND NATIVE FISH

The stream corridor and floodplain areas located at Bakers Ferry Natural Area represent an important restoration opportunity. A series of inter-related management actions will help reduce erosion and runoff, re-establish natural hydrological processes, improve habitat conditions for native fish and wildlife, and support the re-establishment of native vegetation.

Potential actions

- Remove existing floodplain berm to increase energy dissipation and floodplain connectivity.
- Remove or replace undersized conveyance culvert with fish passable structure that allows volitional fish passage and sediment continuity.
- Install large wood habitat structures throughout Clackamas River side channel and the unnamed tributary to increase channel complexity and instream cover.
- Excavate pools adjacent to large wood structures in side channel and the unnamed tributary to provide additional habitat complexity and provide resting and feeding stations for native fish.
- Remove invasive plants and replant native trees and shrubs within a 200-foot wide area fringing the active stream channel to provide shade, detrital inputs and future large wood recruitment.
- Re-establish native shrubs in channel fringe areas and actively manage vegetation to foster expansion of native shrub cover and suppression of reed canarygrass.
- Install floodplain large wood roughness elements to slow overland velocities and create complex flow paths.
- Remove invasive species and revegetate floodplain areas currently used for agriculture.

Over the medium- to long-term – beyond the present site conservation plan planning horizon – the riparian corridor will be managed to expand the lateral extent of native plantings to the whole of the mapped riparian forest management areas. As the stream channel aggrades and reconnects with the floodplain, and more extensive riparian vegetation becomes established, extremes of drought and flooding will be moderated through the creation of more transient water storage along the corridor. Over the long-term, the goal for the site is the re-establishment of a natural hydrologic regime and native trees and shrubs.

UPLAND FOREST

Upland forest habitats are located along the valley walls on the southern and western portion of the site and interspersed in the floodplain areas where topographic elevation limits frequent inundation. Though degraded by past management and invasive species, there is potential to improve forest structure and composition, further diversifying the habitats and benefitted species

at the site. Over the long-term, the goal for upland forests is to foster development of more diverse, late-seral forest characteristics.

Potential actions

- Remove English ivy and holly to reduce competition with native shrub species.
- Manage existing Douglas-fir/big leaf maple to foster re-establishment of late-seral habitat attributes, including canopy gaps, snags and downed wood.

Table 16: Management actions, prioritization, costs and monitoring important to maintaining/improving KEAs at Bakers Ferry Natural Area over the next ten years

CONSERVATION TARGET	KEAS	SOURCE OF STRESS	MANAGEMENT ACTIONS	PRIORITY	SEQUENCING	ESTIMATED COST	MONITORING
Riparian forest	Floodplain connectivity and natural hydrology	Berms, filling, draining, land conversion Land conversion; invasive species	Remove existing berm and re-grade. Establish field border hedge row and revegetate areas outside of farm field.	Medium High	Near term Near term	\$10,000 \$50,000 to enhance existing forest and establish new forest (\$5,000/acre)	Project dependent, but at a minimum should include photo points, channel cross sections, and longitudinal elevation profiles.
Upland forest	Mature trees, standing and downed dead trees	Previous forest management; invasive species	Remove blackberry, ivy and other noxious weeds and restore native shrub community.	Medium	Medium or long term	\$30,000 (\$1,500-\$2,000/acre) for initial treatments and planting	Permanent vegetation plots or transects and photo points.
Native fish	Instream habitat, fish passage, floodplain connectivity	Development, land conversion, simplified stream structure, lack of wood	Restore existing streams to sustainable natural conditions. Remove culvert blockage at farm access road crossing. Beaver periodically block the current culvert. Replacement culvert should be integrated with channel restoration and be sized to accommodate beaver activity. Augment large wood.	High High High	Near term Near term Near term	\$200,000 to \$300,000 for Clackamas side channel restoration \$75,000 to \$100,000 for replacement of undersized culvert at access road \$100,000 for unnamed tributary restoration	Photo points, cross-sections, longitudinal profile, project design, as-built drawings, and fish surveys.

Maps 6 and 7 in Section 7 show the distribution of natural area stewardship classes and present day management status at Bakers Ferry Natural Area, respectively. Stewardship class is a high-level, generalized land cover classification of all Metro properties, reflecting desired future conditions. Stewardship classes are not as specific as conservation target classes, and they include both natural and non-natural land covers.

Management status describes how far a given portion of a site is from desired future condition, with a score of “0” for those that are the farthest away, and “4” for areas currently at desired future condition. Areas lacking a conservation target are scored as “9” (unclassified). Table 16 defines Metro’s management status categories.

Table 16: Conservation management status categories under the Metro site conservation planning framework

MANAGEMENT STATUS	SCORE	TIMEFRAME	DESCRIPTION
Pre-initiation	0	N/A	Highly disturbed sites where restoration work has not been initiated. Few native plants typically present (farm fields, clearcuts, oak woodlands/prairies with high levels of invasive/colonizing vegetation encroachment).
Initiation	1	0-3 years post-restoration	Sites under initial restoration establishment phase. Includes areas under treatment with tilling, mowing, grading, invasive species control and initial planting.
Establishment	2	3-8 years post-restoration	Sites undergoing treatments to reduce competition to vegetation planted or released during the initiation phase. Areas generally stay in this phase until priority native plants have established dominance over competing vegetation.
Consolidation	3	8-20 years post-restoration	Sites with developing native plant communities that require periodic management to reach the desired future condition (tree thinning, mowing and weed control).
Refinement and long-term maintenance	4	Indefinite	Sites that have reached their desired future condition or are on a clear path towards it, requiring only modest additional intervention.
Unclassified	9	N/A	Sites with unclassified conservation targets, representing developed areas.

SECTION 5: ACCESS AND RECREATION

Bakers Ferry Natural Area has no identified recreational uses and there is currently no formal master plan for public access or use. However, the river alcove often attracts fishing boats. There is one gated entrance from South Bakers Ferry Road (Map 2 in Section 7) currently used by the leasing farmer, but public access is currently limited due to steep slopes and a lack of on-site parking and trails. Acquisition of the adjacent floodplain parcels would likely be necessary in order to provide safe public access. Although access infrastructure is expected to remain primitive for the ten-year planning horizon, the planned restoration efforts don’t preclude future access development.

SECTION 6: COORDINATION

PUBLIC INVOLVEMENT

As projects are developed, Metro will provide local stakeholders and residents surrounding Bakers Ferry Natural Area with pertinent information about conservation work before it is implemented. This may include background on the project, timing, cost, material types and other information necessary to keep the public informed.

KEY STAKEHOLDERS AND PERMITTING AGENCIES

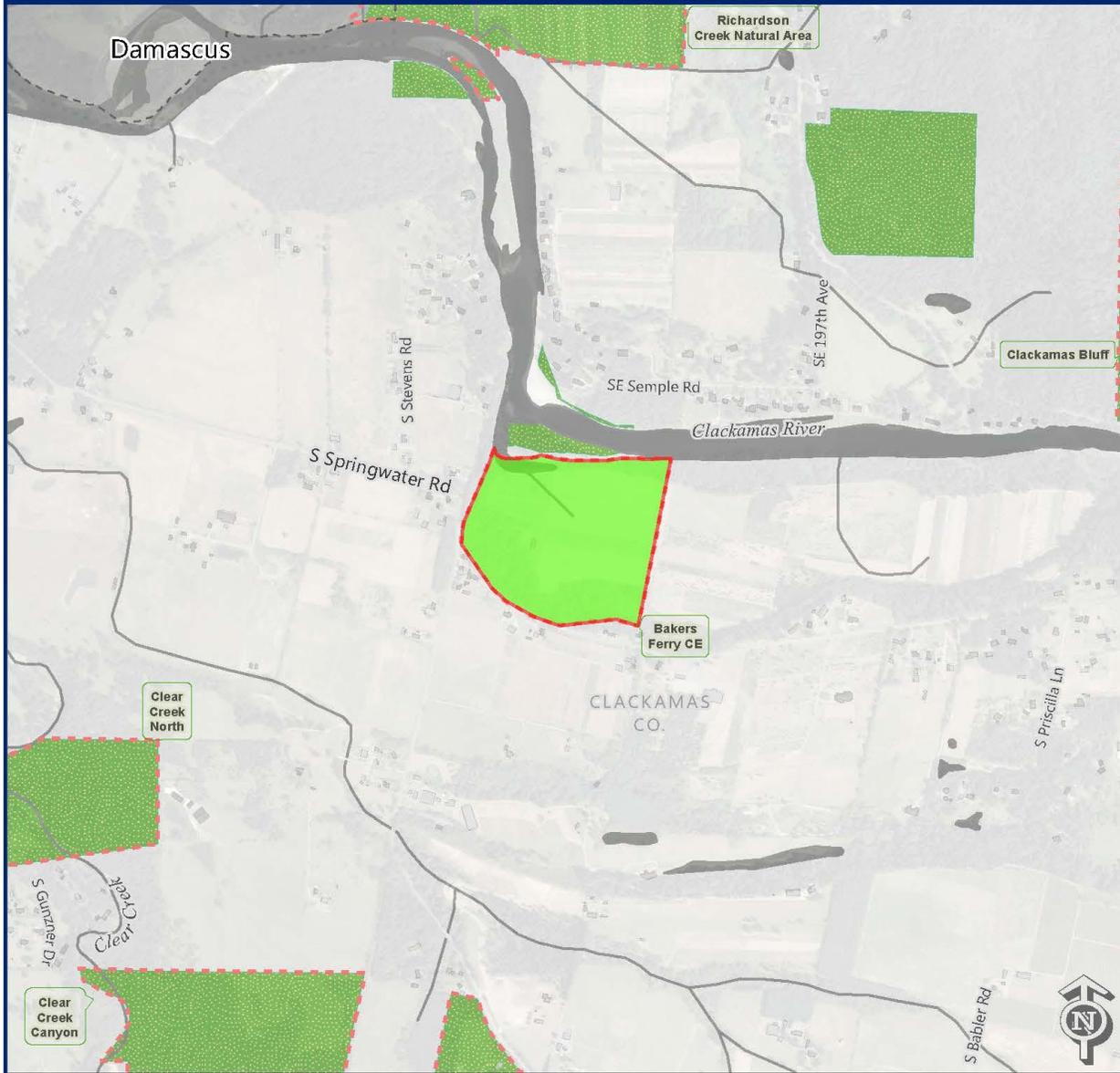
Several stakeholders have already been involved with the site review process and provided input. Key stakeholders and permitting agencies include:

- Calcagno Farms – leasing farmer
- Portland General Electric – potential project funder and partner
- Clackamas Soil & Water Conservation District – invasive species control
- Clackamas River Basin Council – potential riparian revegetation partner
- Clackamas County Planning and Development Services – building or demolition permits are required for removal of the existing residential structure and work within the managed floodplain areas and site access/right-of-way
- Oregon Department of Forestry – regulate forest practices and burning
- Oregon Department of State Lands – regulate removal-fill within waterways and general authorization to remove culvert
- Oregon Department of Fish and Wildlife – consultation on potential in-water work to ensure fish passage criteria met
- U.S. Army Corps of Engineers – federal section 404 or regional general permits covering any new fill placed in wetlands or waters, including restoration of ditched channels

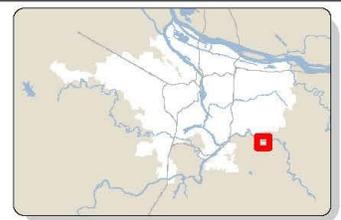
SECTION 7: MAPS

Map 1	Vicinity
Map 2	Site
Map 3	Historical vegetation
Map 4	Current cover
Map 5	Conservation targets
Map 6	Stewardship class
Map 7	Management status
Map 8	Topography
Map 9	Soils
Map 10	Hydrology

VICINITY MAP



- Bakers Ferry CE site
- Other Metro sites
- Parks and/or Natural Areas



Bakers Ferry CE Site Conservation Plan

map date: 9/10/2015

SITE MAP

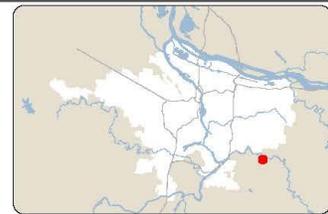


-  Bakers Ferry CE site
-  Other Metro sites

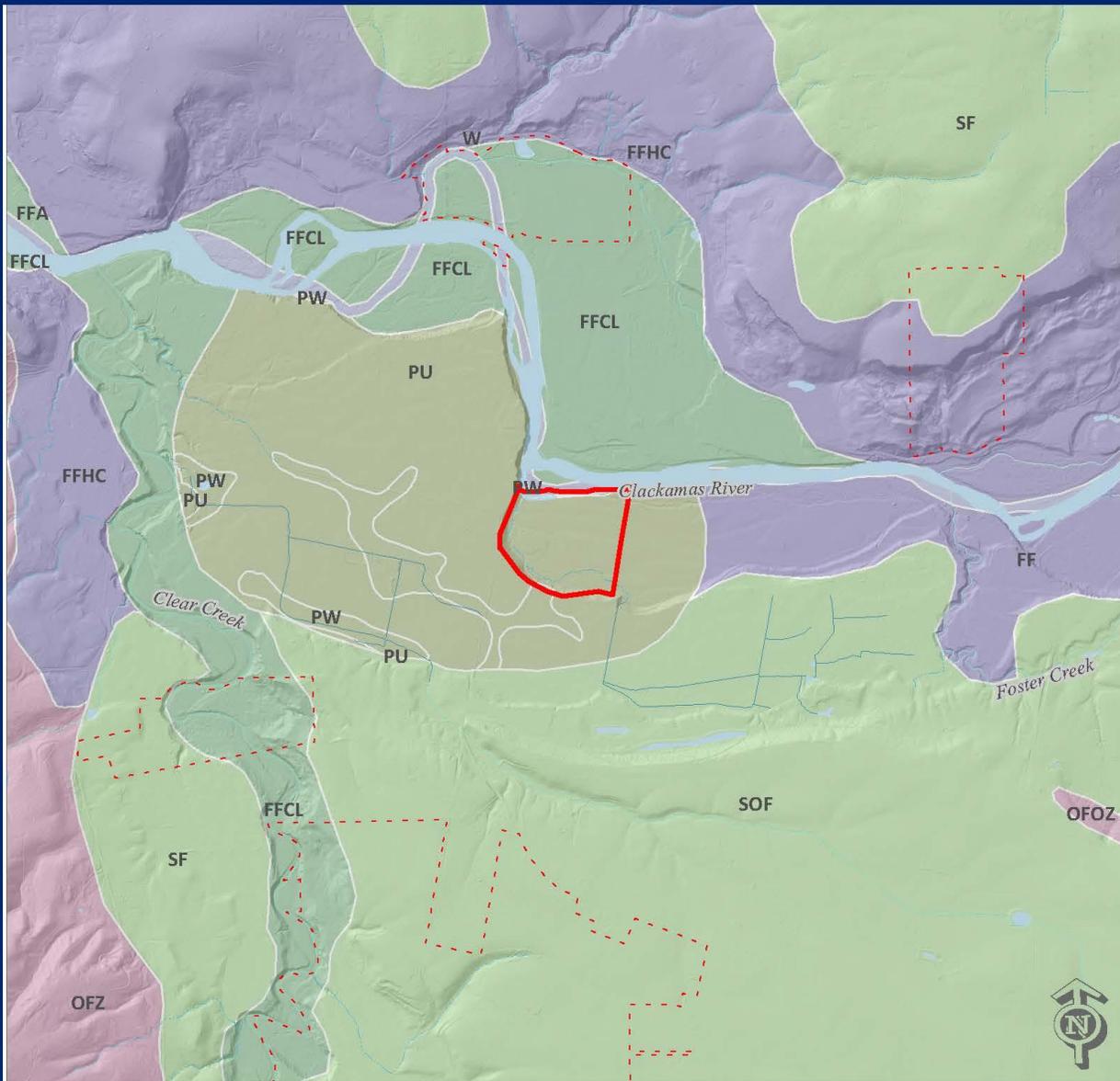
Bond Measure

-  2006 Bond Measure

0 470 940 Feet



HISTORICAL VEGETATION (1851-1910)



- Bakers Ferry CE site
 - Other Metro sites
- | | |
|--|---|
| <p>Historical vegetation</p> <ul style="list-style-type: none"> Closed forest; Riparian & Wetland Closed forest; Upland Prairie | <ul style="list-style-type: none"> Savanna Water Woodland |
|--|---|

* The historical vegetation map should be interpreted as a coarse resolution view into existing vegetation types in the late 1800s.

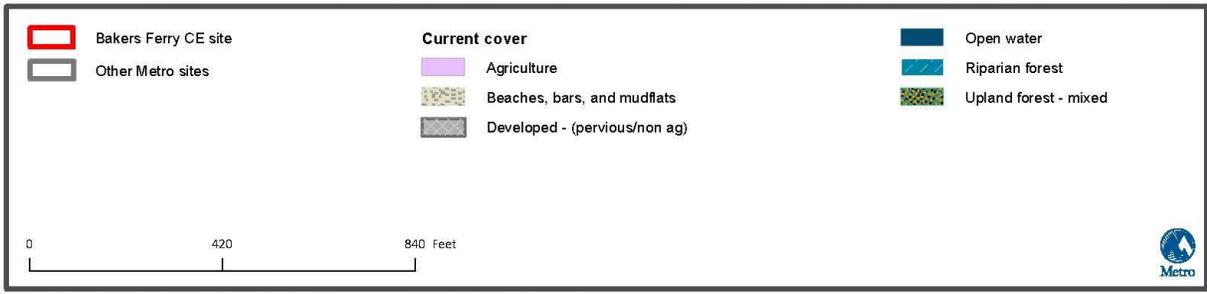
* Labels refer to vegetation subclasses. Detailed descriptions can be found in T:\OBMO\GIS\DATA_V\vegetation\Historical



Bakers Ferry CE Site Conservation Plan

map date: 9/10/2015

CURRENT COVER



Bakers Ferry CE Site Conservation Plan

map date: 9/17/2015

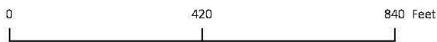
CONSERVATION TARGETS



- Bakers Ferry CE site
- Other Metro sites

Conservation targets

- No targets
- Riparian forest
- Upland forest



STEWARDSHIP CLASS



- Bakers Ferry CE site
- Other Metro sites

- Stewardship Class**
- Beaches, bars and mudflats
 - Developed

- Riparian forest
- Upland forest
- Water

0 420 840 Feet

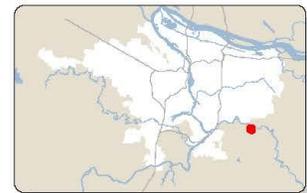


MANAGEMENT STATUS



- Bakers Ferry CE site
- Other Metro sites

- Management status**
- Yet to be classified
 - 0 - Pre-Initiation



0 420 840 Feet

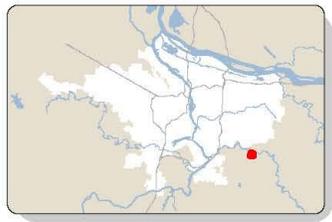


TOPOGRAPHY

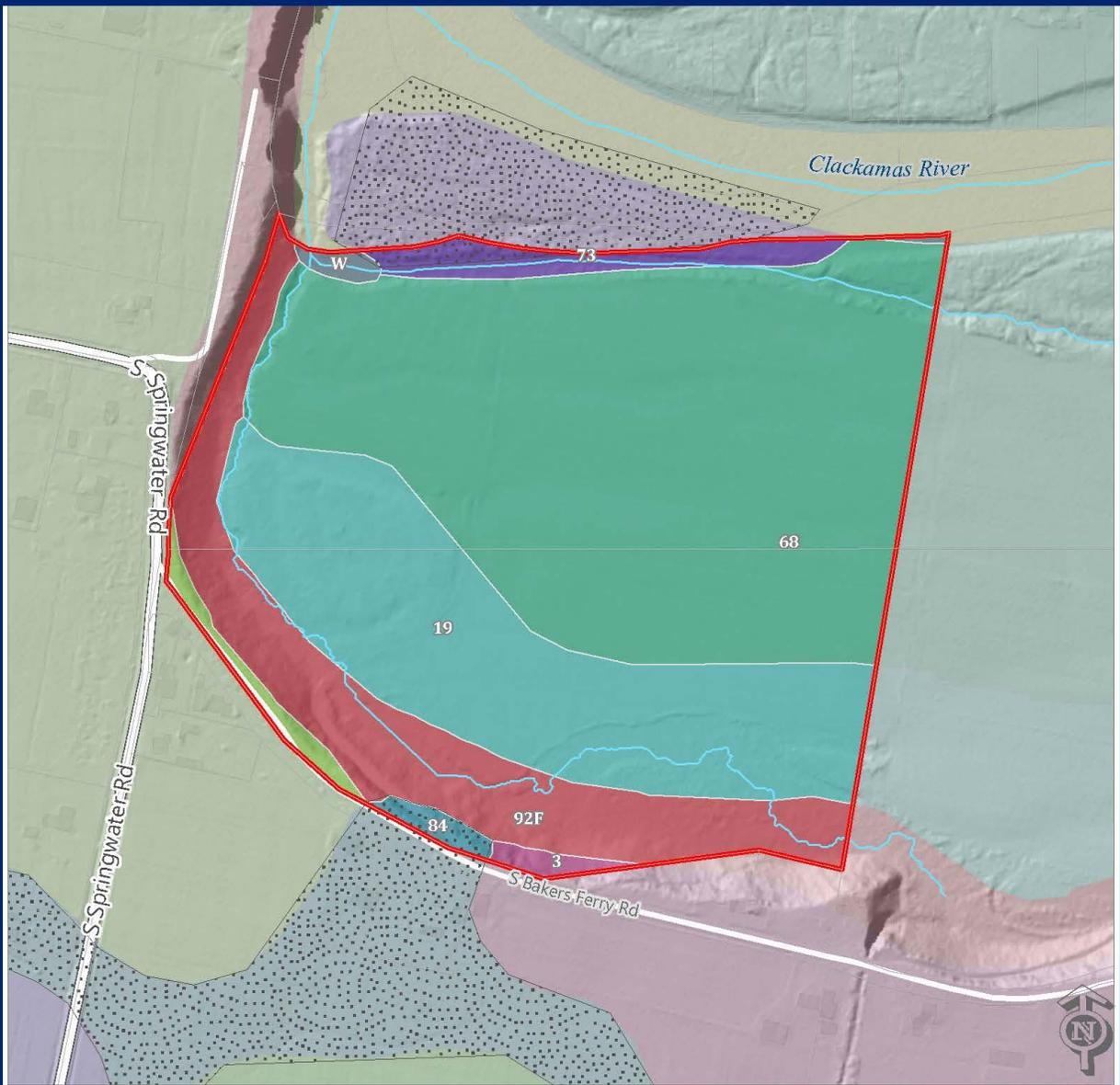


-  Bakers Ferry CE site
-  Other Metro sites
-  10 ft contour
-  50 ft contour

- Streams (Dogami 2010)**
-  33600 - Canal/Ditch
 -  Intermittent
 -  55800 - Artificial Path



SOILS



- | | | |
|----------------------|---------------------------|---|
| Bakers Ferry CE site | NRCS soils on Site | Salem gravelly silt loam, 0 to 7 percent slopes |
| Other Metro sites | Amity silt loam | Wapato silty clay loam |
| Hydric soils | Cloquato silt loam | Water |
| | Newberg loam | Xerochrepts and Haploxerolls, very steep |
| | Riverwash | |

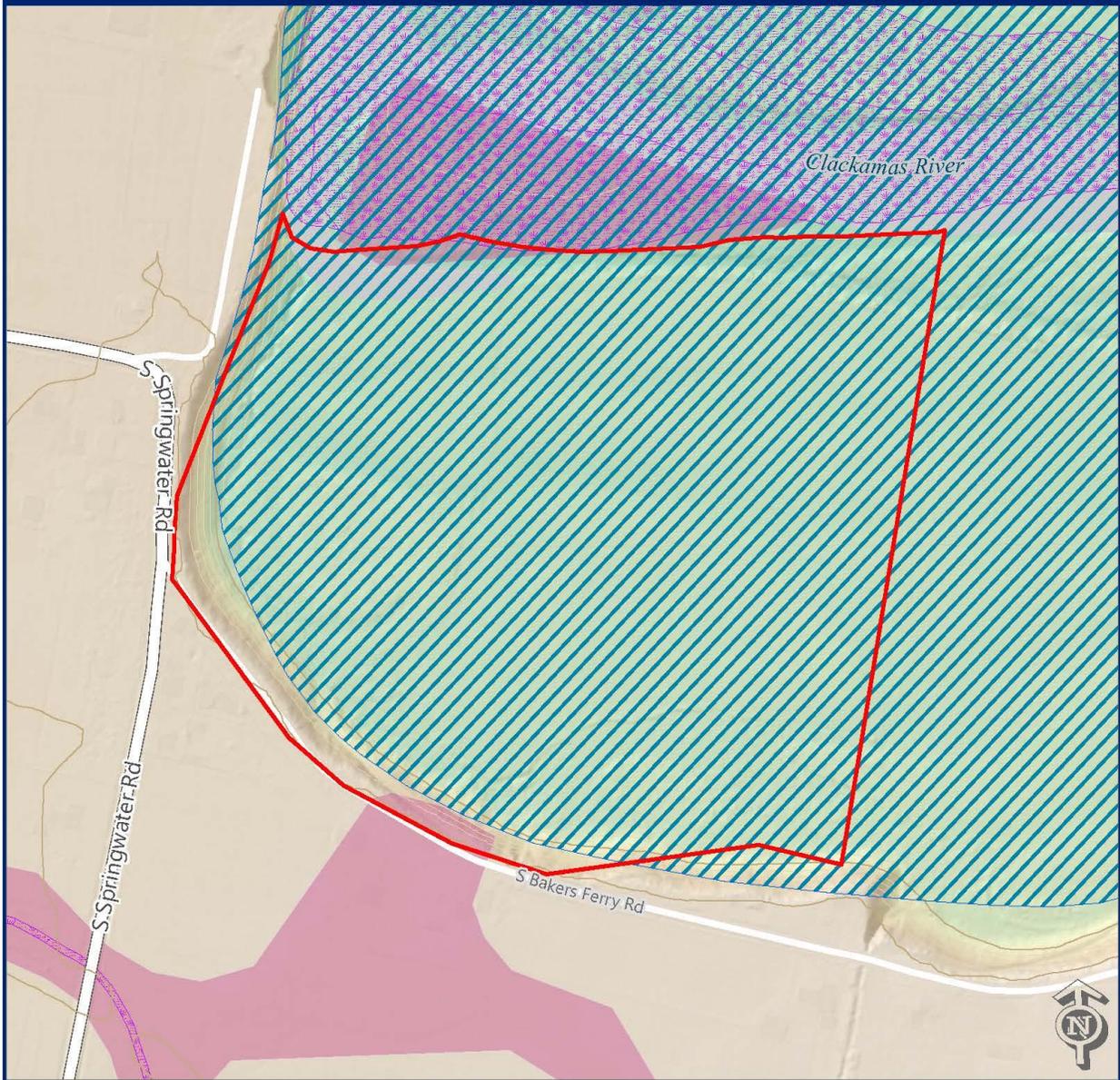
0 425 850 Feet



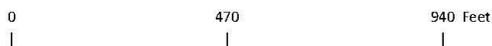
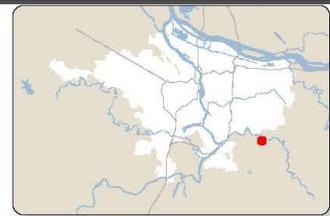
Bakers Ferry CE Site Conservation Plan

map date: 9/10/2015

HYDROLOGY



-  Bakers Ferry CE site
-  Other Metro sites
-  100 year floodplain
-  Wetlands (Wetlands Conservancy data)
-  Hydric soils



Bakers Ferry CE Site Conservation Plan

map date: 9/10/2015

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