



## Barton Natural Area

### Approvals for Site Conservation Plan

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## SITE CONSERVATION PLAN

# Barton Natural Area



June 2016



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## EXECUTIVE SUMMARY

This site conservation plan describes existing conditions and conservation targets at Metro's 95-acre Barton Natural Area. It also identifies the key ecological attributes of the conservation targets as well as likely threats and stresses from increasing public use, introduced species, climate change and other sources. Barton Natural Area protects important riparian and upland forest, native turtle and native fish habitats on the Clackamas River and provides needed connectivity among other natural areas. Currently, riparian forest covers approximately 50 acres of the site and mixed and conifer upland forest covers over 40 acres. Aquatic habitat includes a recently enhanced side channel on the Clackamas River and a 3-acre pond remaining from a former gravel mining operation that now provides native turtle habitat. The side channel provides important habitat for native resident and anadromous fish. Nearly one acre of the site is occupied by a leased residence. Actions proposed in this plan include invasive species management, revegetation including understory planting, and enhancement of turtle habitat and floodplain connectivity. While many factors will influence the actual cost of implementing the recommended management actions, the current estimate is \$300,000 to \$400,000 over a ten-year period.

## SECTION 1: INTRODUCTION

### CONTEXT

Barton Natural Area is located one mile southwest of Barton, Oregon on the north bank of the lower Clackamas River (Map 1) in a mixed agricultural and rural residential area where the Oregon Cascade Range meets the Willamette Valley. The site is directly north and across the river from North Logan Natural Area.

The Clackamas River supplies drinking water to over 200,000 people. It also supports significant runs of imperiled fish species, including Chinook (*Oncorhynchus tshawytscha*) and Coho salmon (*Oncorhynchus kisutch*), steelhead (*Oncorhynchus mykiss*), cutthroat trout (*Oncorhynchus clarki*), bull charr (*Salvelinus confluentus*) and Pacific lamprey (*Lampetra tridentate*) and is identified in federal salmon recovery plans for the Lower Columbia ESU as a focal recovery watershed for Chinook and Coho salmon and winter steelhead. Barton Natural Area's native habitats include riparian and upland forests and wetlands that support a diversity of species including native turtles.

The Clackamas River Basin has been used by people for thousands of years and Barton Natural Area lies 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 that decimated Pacific Northwest indigenous people. 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 transportation, commodity extraction and human settlement.

This site conservation plan is a tool for protecting and enhancing the unique natural characteristics of the site while allowing compatible access by the public. It includes an overview of the history of the site, existing conditions, conservation targets and recreation and access objectives. It also considers the site in relation to surrounding lands and adjacent conservation properties. Nearby conservation properties include the Metro-owned Clackamas Bluff and Richardson Creek to the west,

Barton Park (Clackamas County) and River Island (Metro) to the east/southeast, North Logan (Metro) to the immediate south, and Clear Creek (Metro) to the southwest (Map 1).

Barton Natural Area connects riverine-riparian habitats along the lower Clackamas River corridor and safeguards secondary channels and floodplain wetlands. Historical and ongoing residential development, timber harvest and agricultural practices in the surrounding area have fragmented and degraded native habitats. Barton Natural Area and neighboring conservation properties provide refugia for several species of imperiled fish and wildlife. Ongoing restoration and coordinated management with neighboring conservation properties has the potential to support improved on-site habitat conditions and restored landscape connectivity.

Since acquisition of the site in 1997 and 1999 under Metro's 1995 Open Space Bond Measure, restoration treatments have included tree and shrub plantings, weed treatments, pre-commercial thinning and large woody debris placement.

## **PLANNING AREA**

Barton Natural Area is a 95-acre property on Southeast Bakers Ferry Road, with an upland portion that fronts on Highway 224. The site lies on the north bank of the Clackamas River, northwest of the Bakers Ferry Bridge. It includes a forested riparian-floodplain and adjacent uplands with forest and wetland habitats and consists of five tax lots: 23E22 00100, 23E22 00101, 23E15D 01300, 23E15D 01801 and 23E23B 01200. Tax lot 23E22 00100 has a house with a driveway and gated access road at 19115 SE Bakers Ferry Road. This access road leads to the pond and forested area at the southeast corner of the property. A second access point to the upland forest at the northwest corner of the property is located off of Highway 224 (Map 2).

The zoning designation for all parcels is "Timber District" under the Clackamas County comprehensive plan (see [www.clackamas.us/planning/documents/zdo/ZD0406.pdf](http://www.clackamas.us/planning/documents/zdo/ZD0406.pdf) for more information on allowed and permitted uses).

## **KEY METRO STAFF AND PARTNERS**

### **Staff**

Peter Guillozet, senior natural resource scientist  
Brian Vaughn, senior natural resource scientist  
Chris Hagel, lead natural resource specialist  
Kristina Prosser, natural resource specialist  
Dave Elkin, principal parks planner

### **Partners**

Metro collaborated with Portland General Electric on restoration of aquatic habitat in the Barton side channel and currently collaborates with the Clackamas Soil and Water Conservation District and Clackamas River Basin Council on weed control and riparian habitat restoration efforts in the vicinity. Key stakeholders and partners are listed under Section 6, below, and include neighbors, recreational users of the property, permitting agencies and partner organizations.

## **EXISTING PLANNING DOCUMENTS**

*Distribution of Native Turtles along the Mid-Section of the Clackamas River.* Draft in review. Daniel Rosenberg and Jennifer Gervais, Oregon Wildlife Institute.

*Metro Keens Acquisition Stabilization Report.*

## **SECTION 2: EXISTING CONDITIONS**

Land use in the immediate vicinity of Barton Natural Area is dominated by rural residential development, agriculture and forestry. All parcels on the immediate perimeter are zoned for forestry or agriculture, but there are several two- to five-acre parcels that include rural residential home sites. To the immediate west of the property is a 15-acre parcel that is an active gravel mine. Prior to purchase by Metro, upland portions of the property were managed forestlands, while the floodplain area was used as a gravel mine. Impervious surfaces are limited to the unpaved access road to the residence and floodplain, as well as the building itself. The residence is rented and likely serves as a deterrent against public use of the site.

### **PHYSICAL ENVIRONMENT**

The topography of Barton Natural Area consists of a lower historical floodplain area and an upland high terrace. The floodplain area has both natural and anthropogenic microtopography associated with the pond, a wetland, abandoned channels, small push-up dike and dredge spoils. Historically, the river was likely connected with the majority of the bottomland area, but through incision (and human intervention) most of this area has become disconnected from regular flood inundation. The FEMA floodplain maps show that only the immediate channel fringe lies within the active 100-year floodplain.

The geology of the lower Clackamas River is characterized by volcanic and sedimentary formations, including ancient lava flows and more recent alluvial and lacustrine deposits. The local landscape was shaped by Pleistocene-era Missoula floods, which back-watered the lower Clackamas River valley upstream to Estacada. Terrace ages and elevation differences between the modern and historical floodplain surfaces indicate that the Clackamas River has undergone rapid incision over the past 10,000 years (3.9 mm/year, Wampler 2004).

Soils mapped by the USDA Soil Conservation Service for Barton Natural Area are summarized in Table 1 (Gerig 1985) and illustrated in Map 3. Most soils at the site consist of well-drained sandy or silt loams derived from alluvium.



**Table 1: Mapped soil units, acres and descriptions for Barton Natural Area (derived from Gerig 1985 and the USDA SCS Web Soil Survey)**

MAP UNIT SYMBOL	MAP UNIT NAME	ACRES	PERCENT	DESCRIPTION
11	Camas gravelly sandy loam	9.5	9.8%	Deep, excessively drained soil formed from alluvium on floodplains. Slopes of 0-3% at elevations of 100-1,500 ft. Vegetation: black cottonwood, bigleaf maple, Oregon ash, blackberry.
19	Cloquato silt loam	22.1	23.0%	Deep, well drained soil formed in mixed alluvium on floodplains. Slopes of 0-3% at elevations of 50-300 ft. Vegetation: Douglas fir, black cottonwood, Oregon white oak, bigleaf maple, blackberry.
31F	Dystrochrepts, very steep	9.7	10.1%	Deep, well drained soil formed in colluvium on terrace escarpments. Slopes of 35-80% at elevations of 150-2,000 ft. Vegetation: Douglas fir, western hemlock, western red cedar, bigleaf maple, vine maple, red alder, salal, Oregon-grape, sword fern.
56	McBee silty clay loam	9.8	10.2%	Deep, moderately well-drained soil formed in mixed alluvium on floodplains. Slopes of 0-3% at elevations of 50-650 ft. Vegetation: Douglas fir, Oregon ash, black cottonwood, willow, and trailing blackberry.
68	Newberg loam	14.0	14.5%	Deep, somewhat excessively drained soil formed in mixed alluvium on floodplains. Slopes of 0-3% at elevations of 30-1,000 ft. Vegetation: Douglas fir, Oregon ash, black cottonwood, willow, trailing blackberry.
77B	Salem gravelly silt loam, 0 to 7% slopes	21.5	22.3%	Deep, well drained soil formed in alluvium on stream terraces. Elevations of 200-650 ft. Vegetation: Douglas fir, Oregon white oak, Western red cedar, hazel, Oregon-grape, salal, bracken fern.
87A	Willamette silt loam, gravelly substratum, 0 to 3% slopes	9.0	9.3%	Deep, well drained soil formed in stratified glaciolacustrine deposits on low terraces. Elevations of 100-350 ft. Vegetation: Douglas fir, Oregon white oak, hazel, blackberries.
92F	Xerochrepts and Haploxerolls, very steep	0.7	0.7%	Deep and well-drained soils formed in colluvium derived from igneous rock, on terrace escarpments. Elevations of 50-1,000 ft. Vegetation: Douglas fir, Oregon white oak, bigleaf maple, Western red cedar, red alder, hazel, Oregon-grape, salal.

## PRECIPITATION AND WATER BODIES

Average annual precipitation in the lower Clackamas River valley is 57.8 inches, with more than 90 percent occurring as rainfall between the months of October and May (NOAA National Weather Service Estacada 2SE cooperative weather station, <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?or2693>).

Barton Natural Area is located at approximately river mile 14.5 on the Clackamas River, which is a large tributary of the Lower Willamette River basin. The contributing watershed area is approximately 786 square miles and originates in the high Cascades, flowing north and westward to the confluence with the Willamette River at Oregon City. The reach of the Clackamas River passing Barton Natural Area is a moderate gradient (0.4%) semi-confined channel with point and mid-



channel gravel bars. The channel here exhibits pool-riffle morphology with predominantly gravel and cobble substrates and several secondary channels that pass through the adjacent riparian forest.

Barton Natural Area features a side channel, approximately 4,700 feet long, which originates off-site on Barton County Park to the southeast and flows northwest to its confluence with the Clackamas at the natural area. In addition, there are several wider secondary mainstem channels created by islands within the main channel.

Within the historical floodplain area at Barton Natural Area is a 3.2-acre pond, created from past gravel mining operations at the site. To the northwest of the pond, against the hillslope, is a forested wetland with a high flow outlet that drains to an alcove of the river mainstem with active beaver use. This outlet channel passes over a six-foot-high headcut at the east end of the alcove, which appears inaccessible to anadromous fish at all but the highest flows. To the north and east of the property residence, passing under Southeast Bakers Ferry Road, there is a wetland channel that appears to flow onto Barton Natural Area and transition to subsurface flow within the deciduous upland forest stand. Based on the LiDAR topography, this wetland channel appears to collect spring flows emanating from the base of a steep hillslope bordering the north edge of the Clackamas River bottomlands to the east of the site.

## MAJOR HABITAT TYPES

Current cover types at Barton Natural Area include riparian forest, upland forest (mixed and deciduous), and the open water pond, as well as river channel bars and a small developed area around the residence off Southeast Bakers Ferry Road (Map 5).

A riparian forest area 46.7 acres in size occupies most of the historical floodplain. Within the southeast half of this stand, black cottonwood (*Populus trichocarpa*) dominates, with planted Douglas fir (*Pseudotsuga menziesii*) in the understory and no significant shrub layer. To the north and west, in areas bordering the pond and wetland, there is a mix of black cottonwood, red alder (*Alnus rubra*), bigleaf maple (*Acer macrophyllum*) and Oregon ash (*Fraxinus latifolia*) with a diverse shrub layer. The side channel here has engineered logjams and there are remnant piles of dredge spoils from when the site was a gravel mine. Portions of this riparian forest, bordering the wetland appear to be slightly lower in elevation than areas to the southeast of the pond and closer to the river. This may be due in part to natural levees and/or a small push-up dike at the mainstem channel edge.

Embedded within the riparian forest area are a 3.2-acre excavated pond and a 4.6-acre forested wetland. The pond is bordered by openings in the forest canopy dominated by reed canarygrass (*Phalaris arundinacea*). The forested wetland canopy consists of Oregon ash, red alder, and black cottonwood with a well-developed shrub layer of red osier dogwood (*Cornus sericea*), giant horsetail (*Equisetum telmateia*), oso berry (*Oemleria cerasiformis*) and Pacific ninebark (*Physocarpus capitatus*). Three islands measuring 6.1, 0.5, and 0.7 acres in size occupy the mainstem channel, with open gravel bars, willow (*Salix spp.*) thickets and young cottonwood forest.

Eighty feet above the historical floodplain is an ancient terrace surface with a mature 36.8-acre mixed upland forest dominated by Douglas fir, western red cedar (*Thuja plicata*), bigleaf maple, and red alder, with vine maple (*Acer circinatum*), hazel (*Corylus cornuta*), sword fern (*Polystichum munitum*), snowberry (*Symphoricarpos albus*), creeping Oregon-grape (*Mahonia nervosa*) and salal

(*Gaultheria shallon*) in the understory. A 3.5-acre deciduous-dominated upland forest occupies the hillslope on the east border of the property dominated by bigleaf maple and black cottonwood.

## VEGETATION AND WILDLIFE

### Historic vegetation and land use

Based on historical vegetation maps compiled by Christy and Alverson (2011), the Barton Natural Area historical floodplain area was dominated by red alder-mixed conifer forest (“including western red cedar, grand fir, Douglas fir, hemlock, bigleaf maple and cottonwood”) with mixed mesic conifer forest (“Douglas fir, western hemlock, red cedar, grand fir, bigleaf maple, yew, dogwood, white oak, alder”) occupying the uplands. On the uplands to the immediate east of the site was a “scattering of Douglas fir and white oak woodlands” and to the south of the river was Douglas fir forest (Map 4). Due to the relatively coarse nature of the historical General Land Office surveys, smaller features such as individual stream-riparian corridors were not typically resolved on maps.

### Invasive plants

Invasive species cover likely increased after timber harvest but prior to acquisition by Metro. Extensive weed management since that time has led to a relatively low level of invasive cover. Target species are currently distributed mainly in small patches. Himalayan blackberry (*Rubus armeniacus*) is primarily in the northwest portion of the riparian forest and in the mixed upland forest. Reed canarygrass is primarily in riparian areas, in the forested wetland and bordering the pond. Other weeds under management at the site include purple loosestrife (*Lythrum salicaria*), Bohemian knotweed (*Fallopia x bohemicum*), English holly (*Ilex aquifolium*), hawthorn (*Crataegus monogyna*), cherry (*Prunus spp.*), clematis (*Clematis vitalba*), vinca (*Vinca minor*), ivy (*Hedera helix*), garlic mustard (*Alliaria petiolata*), false brome (*Brachypodium sylvaticum*), knapweed (*Centaurea spp.*), spurge laurel (*Daphne laureola*), butterfly bush (*Buddleja davidii*) and scotch broom (*Cytisus scoparius*).

### Wildlife

Barton Natural Area supports a diverse array of wildlife including amphibians, reptiles, birds and mammals. Hawks, falcons, Neotropical migrant songbirds, pileated woodpeckers (*Dryocopus pileatus*) and grouse (*Bonasa umbellus*) all make use of the site as do small and large mammals, which serve as prey for raptors and predators such as cougar (*Felis concolor*) and bobcat (*Lynx rufus*). The site’s habitats also support Douglas squirrel (*Tamiasciurus douglasii*), wood rat (*Neotoma spp.*), chipmunks (*Tamias townsendii*), voles (*Phenacomys spp.* and *Microtus spp.*), mice (*Pseudomys spp.*), mink (*Mustela vison*), bobcat, black bear (*Ursus americanus*), black tail deer (*Odocoileus hemionus*), elk (*Cervus elaphus roosevelti*) and several species of bats. The pond supports western pond turtles (*Actinemys marmorata*) and possibly painted turtles (*Chrysemys picta*) and signs of beaver (*Castor canadensis*) activity are common.

Anadromous fish occurring in the Clackamas basin include spring and fall Chinook, Coho salmon, winter steelhead, non-native summer steelhead, migratory cutthroat trout and Pacific lamprey (Runyon and Salminen 2005). Resident native fish in the Clackamas River include cutthroat trout, rainbow trout (*Oncorhynchus mykiss*) and bull trout (*Salvelinus confluentus*). 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 (*Rhynchithys cataractae*), speckled dace (*Rhynchithys osculus*), red-sided shiner (*Richardsonius balteatus*), brook lamprey (*Lampetra richardsoni*), suckers (*Catostomus spp.*) and northern pikeminnow (*Ptychocheilus oregonensis*).

Based on recent turtle surveys in the Lower Clackamas River corridor, Barton Natural Area and potentially the adjacent North Logan Natural Area represent important refugia for native turtle populations owing to the presence of warmwater, off-channel pond habitat with closely juxtaposed upland nesting areas. The recent survey confirmed a small population of western pond turtles at Barton Natural Area, with potential opportunities for habitat enhancement and population expansion at both sites (Rosenberg and Gervais, Draft in review).

### **RECENT MANAGEMENT HISTORY**

Since acquiring the site in 1995, Metro has focused on reforestation, weed control and understory plantings within the riparian areas. Management of the mixed upland forest area has been largely limited to weed control treatments for false brome, English ivy and other invasive species. In addition, Portland General Electric installed engineered logjams within the lowermost section of the side channel at the southeast corner of the property.

### **NATURAL RESOURCES OF SPECIAL INTEREST**

Natural resources of special interest at Barton Natural Area include the largely intact Clackamas River riparian-floodplain habitats. Metro plant materials scientist Marsha Holt-Kingsley visited the site and did not identify any rare plants. No formal cultural resource or archeological surveys have been completed at the site and none are planned at this time.

Barton Natural Area is surrounded by other natural areas including Richardson Creek and Clackamas Bluff natural areas downstream, the Clackamas-Deep Creek confluence to the immediate northwest, North Logan Natural Area to the immediate south, and the Barton County Park-River Island Natural Area upstream of Bakers Ferry Road (Map 1). To the southwest, at Clear Creek Natural Area there is active restoration of white oak (*Quercus garryana*) savanna habitat. This complex of conservation properties affords unique opportunities to protect landscape-level habitat connectivity for both aquatic-riparian and upland habitats.

## **SECTION 3: CONSERVATION**

### **CONSERVATION TARGETS**

The habitat conservation targets represent major habitat types present at the site, including riparian and upland forests. The immediate setting of Barton Natural Area – with other, closely juxtaposed conservation properties – affords opportunities to reconnect habitat fragments distributed across the landscape both upstream and downstream along the Clackamas River.

In addition to the habitat conservation targets, Barton Natural Area safeguards habitats for priority species including native fish and western native turtles. These species habitats overlap with and are embedded within the Clackamas River riparian-floodplain area and are not explicitly mapped, but represent important species conservation targets for the site.

The habitat conservation targets are described briefly in Table 2 and are shown on Map 6. Acreages of existing cover types, conservation targets and stewardship types are presented in Table 3.

## 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. Tables 4a-d below describe KEAs and their ratings for Barton Natural Area.

**Table 2: Current status and generalized desired future condition of Barton Natural Area conservation targets**

TARGET	CURRENT STATUS	DESIRED FUTURE CONDITION
Riparian forest	Established mature tree canopy and ongoing understory restoration. Recent efforts have enhanced off-channel habitats.	Extensive native forest community with standing and downed wood, a complex network of interacting channel-floodplain habitats, and a mosaic of seasonal and perennial wetlands.
Upland forest	Under restoration to re-establish a mix of native upland tree and shrub species, stand-level complexity, and late seral characteristics.	Mature native forest with late-seral characteristics including a diversity of species, tree ages, and canopy layers; canopy gaps; snags and downed wood; and well-developed organic soil horizons.
Native turtle habitat	Some suitable nesting areas, few basking sites available and encroaching vegetation.	Many suitable nesting areas and basking sites available with continued aquatic connectivity and access to suitable habitat beyond site.
Native fish habitat	Some habitat complexity in the restored side channel. The mainstem lacks wood/habitat complexity.	Complex, functional side channel, additional wood in the mainstem and greater floodplain connectivity.

**Table 3: Summary of current cover, conservation targets, stewardship type, and management status for Barton Natural Area** (total acreage reported below is calculated from GIS, which differs slightly from the deed or survey recorded acreage reported above)

CURRENT COVER	ACRES	STEWARDSHIP TYPE	ACRES
Riparian forest	51.2	Riparian forest	51.2
River bars	7.2	River bars	7.2
Pond	3.2	Water	3.2
Upland forest - mixed	36.9	Upland forest	40.3
Upland forest - deciduous	3.5	Developed	0.8
Developed - pervious	0.8	<b>Total</b>	<b>102.7</b>
<b>Total</b>	<b>102.7</b>		
CONSERVATION TARGET	ACRES	MANAGEMENT STATUS	ACRES
Riparian forest	51.2	0 - Pre-initiation	0.8
Upland forest	40.3	1 - Initiation	0.0
No target	11.2	2 - Establishment	0.0
<b>Total</b>	<b>102.7</b>	3 - Consolidation	87.0
		4 - Refinement and maintenance	4.6
		9 - No targets (developed)	10.4
		<b>Total</b>	<b>102.7</b>

Table 4a: Key ecological attributes for riparian forest at Barton 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	Very Good	Very Good	Very Good	Native riparian forest area is largely intact and contiguous with adjacent upland forest. A ~2-acre cleared area is present at the access road end.
Condition	Vegetative structure: shrub layer	% native shrub cover	<10% cover	10-25% cover	25-50% cover	>50% cover	Fair	Good	Very Good	Riparian shrub understory is highly variable across the site. To the north and west of the open water pond, there are diverse and abundant native shrubs with reed canarygrass in select locations. To the south and east of the pond, native shrubs are largely absent, with some understory Douglas fir that has been planted or is invading the stand.
Condition	Standing and downed dead trees	Average # snags and large wood (>50 cm, or 20 in, DBH) per 0.4 ha (1 ac)	<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	Good	Good	Most snags and downed wood are clustered in the area to the northwest of the open water pond, around the bottomland hardwood wetland, and along the side channel to the southeast.
Condition	Floodwater access to 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)	Fair	Good	Good	The Clackamas River main channel is incised ~6 ft below adjacent top of bank. However, portions of the riparian area around the bottomland hardwood wetland are lower and may receive hyporheic flow from the river. A small push up dike lies between the open water pond and the river and there are remnant dredge spoils deposits on the floodplain but there has been active restoration and LW additions to the side channel to enhance channel-floodplain connectivity.

Table 4b: Key ecological attributes for upland forest at Barton Natural Area

CATEGORY	KEA	INDICATOR	----- INDICATOR RATING -----				CURRENT RATING	DFC* FOR THIS SCP	LONG TERM DFC	COMMENTS
			POOR	FAIR	GOOD	VERY GOOD				
Condition	Native tree and shrub richness	Number of native tree and shrub species per acre	<5 species per 0.4 ha (1 ac)	5-8 species 0.4 ha (1 ac)	8-12 species per 0.4 ha (1 ac)	>12 species per 0.4 ha (1 ac)	Very Good	Very Good	Very Good	Native tree and shrub community richness is very good at present, though there are locations with infestations of invasive blackberry.
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	Good	Good	Very Good	Mature trees are not presently abundant on the flat above the river, but the hillslope has higher numbers of mature trees. Most mature trees are either Douglas fir or western red cedar, with fewer western hemlock and grand fir.
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	Poor	Fair	Very Good	Standing tree densities are variable across the site, with some openings and places where there are high stocking levels of Douglas fir. In the latter areas, there is opportunity to create additional snag and downed wood habitat.

Table 4c: Key ecological attributes for native turtle habitat at Barton Natural Area

CATEGORY	KEA	INDICATOR	----- INDICATOR RATING -----				CURRENT RATING	DFC* FOR THIS SCP	LONG TERM DFC	COMMENTS
			POOR	FAIR	GOOD	VERY GOOD				
Condition	Nest habitat availability	Number of suitable nesting areas within 46 m (150 ft) of water	Suitable nesting areas lacking or located in high-disturbance areas	Only a single suitable nesting area present (where predators can find all nests nearby) or located in areas frequented by people and/or dogs	Multiple suitable nesting areas are available in areas that have low human and pet activity.		Fair	Good	Good	Suitable nest sites with sandy soil and good exposure to the sun within 50 m of the pond are available but river channel incision and lack of accessible accretion surfaces limits their quality and extent. There are forest openings with good sun exposure to the north, northeast, and southeast of the pond where there is potential for creation of suitable nesting substrates. Ongoing management of encroaching vegetation in current nesting areas is necessary to maintain current habitat.
Condition	Basking site availability	Number of basking sites	Suitable basking sites lacking	Few (0-3) basking sites available or with poor sun exposure	>3 basking sites available with good sun exposure.		Fair	Good	Good	Lack of basking sites affects habitat suitability (Gervais et. al. 2009). Basking habitat includes logs, rocks or other materials protruding from water; bare ground or areas of short grass or gravel; all must be sunny locations in April through May. There are a few logs around the wetland edge, but a lack of mature overhanging trees that could recruit to the pond and form new basking sites. Placement of LW in and around the open water pond is needed to enhance western pond turtle basking habitat.
Landscape context	Dispersal corridors (connectivity) to suitable habitat	Availability and access to off-site suitable habitat	Isolated: suitable habitat lacking beyond site or access blocked	Limited suitable habitat beyond site or access often requires crossing roads, developed areas, etc.	Ample suitable habitat beyond site but access requires crossing roads, developed areas, etc.	Ample suitable habitat beyond site and aquatic connectivity present	Very Good	Very Good	Very Good	With the Clackamas River main channel immediately adjacent to the pond, there is ample opportunity for dispersal upstream and downstream from the site.

Table 4d: Key ecological attributes for native fish habitat at Barton 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	Less than 2 habitat units	Between 2-5 habitat units	Between 5-10 habitat units	>10 habitat units	Fair	Fair	Fair/Good	Habitat complexity is currently good in the side channels that have undergone restoration treatments, but the mainstem channel (representing the majority of available aquatic habitat) is rated fair.
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/Fair	Fair	Fair/Good	The side channels have undergone past restoration treatments and are rated fair for numbers of large wood pieces, whereas the mainstem channel is lacking large, stable wood pieces or jams. There may be opportunities to import large woody debris to the site. However, there are logistical and financial constraints that make this unlikely under this plan.

## **THREATS**

Numerous stresses influence current conditions at Barton Natural Area and threaten long-term ecological health and the viability of restoration treatments (Tables 5a-c). These stresses include historical land conversion, gravel mining, river channelization, active farming and residential development on neighboring lands, invasive species, and ongoing human recreational uses.

Due to the public access pressures and location along a river corridor, Metro will need to be vigilant in Early Detection-Rapid Response activities for invasive species and significant staff and financial resources may be required to deal with invasive species in the future. Establishing native vegetation now will help defend against the establishment and spread of invasive species.

The threats and sources summary can be used to prioritize restoration actions and future management of the site (Table 6).

## **CLIMATE CHANGE CONSIDERATIONS**

Climate change is anticipated to affect summer high temperatures, growing season length, wet-season storm events and runoff patterns, as well as drought-season water availability. Clackamas River hydrology will likely shift to flashier runoff patterns as winter storms shift from snow- to rain-dominated, and snowpacks are lost/reduced in depth and extent. With longer, more pronounced summer drought seasons, tree growth may be reduced and the risk/severity of wildfires could increase.

Other indirect effects of climate change could include increased erosion, invasion of opportunistic native and non-native species, extirpations of less resilient native species, shifts in vegetation phenology, and alterations to pollination, dispersal, competition and predator-prey dynamics.

As the direct and indirect effects of climate change begin to manifest at the site, it is important to provide restored native habitats and viable corridors for the movement of flora and fauna across the landscape. Barton Natural Area serves as an important connection for the movement of organisms up and down the Clackamas River corridor, and floodplain secondary channels and wetlands fed by hyporheic flows provide important buffers from seasonal water temperature extremes. The potential for altered hydrology increases the importance of riparian forest health, extent and continuity. Enhancing and increasing the resiliency of in- and off-channel habitats to the effects of climate change could help cold water-dependent native fish species.

At the site level, the likelihood of native species persistence will be enhanced by restoration actions that remove or remedy habitat fragmentation, re-establish and reconnect native drought-resistant habitats (oak savannah), restore legacy habitat features that serve as refugia (downed wood and snags), buffer extreme climate events by restoring natural hydrology, and control invasive plants.



Table 5a: Threats and sources of stress for riparian forest and native fish habitat at Barton Natural Area

Source of Stress		Stresses (rank each as L-M-H-VH for contribution, irreversibility & source)													Comments
		Habitat Destruction/ Conversion	Stress Rank	Altered Composition / Structure <sup>1</sup>	Stress Rank	Competition for Resources	Stress Rank	Human Disturbance	Stress Rank	Altered Hydrology	Stress Rank	Impaired habitat connectivity	Stress Rank	THREAT RANK	
Development, land conversion	Contribution	High	Med									High	High	High	Historical large woody debris removal, channelization and upstream dam construction, which has altered patterns of incision/aggradation, simplified the main channel, reduced channel meandering, and disconnected secondary channels and associated floodplain wetlands.
	Irreversibility	Med										High			
	Source Rank	Med										High			
Invasive species	Contribution			Low	N/A	Low	N/A							N/A	Invasive species are under control and cover minimal area. Small patches of reed canarygrass and other weeds are present and require monitoring and control treatments.
	Irreversibility			Low		Low									
	Source Rank			Low		Low									
Human use, dogs, trails, fishing, etc.	Contribution													N/A	Currently no public access to site. However, ease-of-access from gate at Bakers Ferry Road may create future human use pressures.
	Irreversibility														
	Source Rank														
Diking, filling, draining	Contribution									Med	Med			Low	Mainstem channel incision as well as historical floodplain excavation and bank armoring reduces frequency and extent of overbank flows. These changes may also be facilitating invasion of upland trees and shrubs on historic floodplain.
	Irreversibility									Low					
	Source Rank									Low					
Previous forest management	Contribution			Med	Med					Med	Med			Low	Historical loss of large trees and woody debris from river corridor has reduced the number and size of debris piles and microtopography on floodplain, altering tree and shrub community structure and reducing frequency of overbank flows onto floodplain.
	Irreversibility			High						High					
	Source Rank			Med						Med					
Climate change	Contribution									High	Med			Med	Potential long-term effects due to alterations in runoff patterns and microclimates. However, for the wetland and pond these changes may be buffered by established forest canopy and hyporheic flow inputs.
	Irreversibility									Very High					
	Source Rank									High					

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

Table 5b: Threats and sources of stress for upland forest at Barton Natural Area

Source of Stress		Stresses (rank each as L-M-H-VH for contribution, irreversibility & source)													Comments
		Habitat Destruction/ Conversion	Stress Rank	Altered Composition / Structure <sup>1</sup>	Stress Rank	Competition for Resources	Stress Rank	Human Disturbance	Stress Rank	Altered Hydrology	Stress Rank	Impaired habitat connectivity	Stress Rank	THREAT RANK	
Development, land conversion	Contribution													N/A	
	Irreversibility														
	Source Rank														
Fire suppression	Contribution													N/A	
	Irreversibility														
	Source Rank														
Invasive species	Contribution					Med	Low							N/A	Nonnative blackberry and other invasive species are present throughout stand, requiring control.
	Irreversibility					Low									
	Source Rank					Low									
Human use, dogs, trails, fishing, etc.	Contribution													N/A	No public access to site at present, and inaccessible.
	Irreversibility														
	Source Rank														
Previous forest management	Contribution	Low	Med	Low	Med									Med	Historical logging has resulted in loss of standing and downed wood, soil duff, and stand-level heterogeneity. Active management is needed to foster redevelopment of late-seral forest characteristics.
	Irreversibility	Low		Low											
	Source Rank	Low		Low											
Climate change	Contribution			High	Low									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											

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

Table 5c: Threats and sources of stress for native turtle habitat at Barton 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 <sup>1</sup>	Stress Rank	Competition for Resources	Stress Rank	Human Disturbance	Stress Rank	Altered Hydrology	Stress Rank	Impaired habitat connectivity	Stress Rank		
Development, land conversion	Contribution													N/A	Historical excavation of pond has created habitat for pond turtles where likely none was present before.
	Irreversibility														
	Source Rank														
Invasive species	Contribution					Med	Med							Low	Douglas fir plantings and natural succession of trees and shrubs within forest clearing to SE of pond and on pond perimeter jeopardizes potential nesting and basking habitats.
	Irreversibility					Low									
	Source Rank					Low									
Human use, dogs, trails, fishing, etc.	Contribution													N/A	No trails are present, and no human access is currently planned or authorized. However, there is potential future threat from human access to forest clearing via access road.
	Irreversibility														
	Source Rank														
Diking, filling, draining	Contribution													N/A	
	Irreversibility														
	Source Rank														
Climate change	Contribution			Med	Low					Med	Low	Med	Low	Low	Potential climate change effects on turtles and habitat are unknown but are unlikely to be severe in the 10-year timeframe of this SCP. Warming could enhance turtle basking and nesting habitat but could also alter hydrology, further fragment habitats, and impede dispersal. Warmer soils affect sex ratios and the pond could dry before end of summer, or become overgrown with plants that tolerate shallower water.
	Irreversibility			Med						Med		Med			
	Source Rank			Med						Med		Med			

<sup>1</sup>Includes 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 Barton 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 6.

Weed management will pose an ongoing challenge for Metro land managers. Invasive weeds are largely under control at present, but the site has extensive boundaries bordering residential and aggregate mining properties where weeds are persistent. The river corridor poses a particular challenge because weed propagules can be carried to the site via water and visitors (e.g. dog fur as well as fur of native mammals, shoes, or fishing waders).

**Table 6: Threats and actions for key ecological attributes (KEAs) of important conservation targets**

CONSERVATION TARGET	KEA	THREAT	ACTION(S)	NOTES
All	Species composition and competition	Invasive species	Integrated approach of monitoring, cutting, herbicide spraying and controlled burns.	This will be an ongoing challenge for the entire natural area.
Riparian forest	Floodplain connectivity	Land conversion	Continue native tree and shrub plantings in forest understory. Install engineered logjams within active channel of main river.	Work with PGE to evaluate performance of restored logjams in side channel.
Upland forest	Shrub species composition; mature trees; standing and down dead trees	Land conversion; previous forest management	Re-establish native understory trees and shrubs, snags and downed logs; stand-level heterogeneity.	Invasive weeds are present in patches within openings and the forest understory.
Native fish	Habitat complexity and numbers of key large wood pieces	Habitat destruction; human disturbance; impaired connectivity	Continue placements of engineered logjams in side and mainstem channels.	Monitor and evaluate changing hydrology and restoration impacts on habitat.
Native turtles	Species composition and competition; habitat structure	Altered hydrology; invasive species	Remove Douglas fir and augment native shrubs under cottonwood forest; maintain and create turtle basking and nesting habitat around pond.	Additional assessment of turtle populations and habitat use is needed for the site before specific restoration treatments are designed and implemented.

## SECTION 4: MANAGEMENT ACTIONS

Restoration actions, anticipated challenges, and estimated costs are described in this section and in Table 7, below. For several restoration actions, there are options for Metro to stage interventions in order to gauge initial success, manage costs and maintain working relationships with neighbors. Each conservation target habitat presents unique challenges, and proactive measures to prevent or minimize future threats at the property scale and beyond will be beneficial. While many factors will influence the actual cost of implementing the recommended management actions, the current estimate is \$300,000 to \$400,000 over ten years.

## **INVASIVE SPECIES**

Metro has completed the mapping of invasive weeds at the site, but periodic reassessment will be necessary. Due to the close juxtaposition of fringing rural residential and aggregate mining lands at Barton Natural Area, regular management of invasive species will be necessary to maintain the current low-to-medium weed infestation levels, and to address new weed threats. In the near term, Metro will continue monitoring and treatment of purple loosestrife, knotweed, holly, hawthorn, cherry, clematis, vinca, ivy, garlic mustard, false brome, knapweed, spurge laurel, scotch broom, reed canary grass 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 active management of the site's 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 (CRISP), a multi-partner effort to reduce the threat of invasive species to riparian habitat and water quality in the Clackamas basin.

## **RIPARIAN CORRIDOR AND AQUATIC HABITATS**

Barton Natural Area represents an important opportunity for the long term conservation of native fish, turtles and other riverine-riparian dependent flora and fauna. A former gravel mining borrow pit is now functioning as a perennial, open water pond that supports western pond turtles, and enhancing basking and nesting habitat is a high priority. There is a history of engineered logjam placements in side channels as well as ongoing efforts to restore native understory tree and shrub communities. In general, future actions should support channel-floodplain geomorphic complexity compatible with foreseeable sediment, land use, large wood and recreational regimes.

In the near term, Metro will continue weed treatments for invasive Himalayan blackberry and butterfly bush, replanting treated areas with native shade-tolerant trees and shrubs. In concert with efforts at River Island Natural Area, Metro should further evaluate current use of the site by turtles in advance of future management actions. These actions could include placement of logs in and on the perimeter of the pond, and maintenance of open areas fringing the pond to support upland nesting by turtles. Douglas fir within the cottonwood forest understory to the southeast of the pond could be removed to maintain solar insolation for the benefit of turtles. Managers may also wish to explore opportunities for re-establishment of native shrub communities in the cottonwood forest understory here. Over the medium term, Metro will evaluate the potential value of removing/reconfiguring dredge spoils on the historical floodplain to create more natural floodplain microtopography and restoration planting sites on a more moderately sloped riverbank. In synchrony with these actions, Metro may also investigate opportunities to protect and enhance beaver habitat around the alcove and side channel confluence for the benefit of beaver, native fish and turtles. Over the long-term, Metro will also seek to maintain and enhance populations of recovering Coho, steelhead and Chinook populations.

## **UPLAND FOREST**

Upland forest habitat at Barton Natural Area is relatively established, but there remain patches of invasive plants in the understory, which should be prioritized for treatment and control. Select tree thinning treatments within the stand may also be useful to accelerate tree growth, hasten the development of late-seral forest characteristics, and create opportunities for the creation of small snags and downed wood.

Table 7: Management actions, prioritization, costs and monitoring important to maintaining/improving KEAs at Barton Natural Area over the next ten years

CONSERVATION TARGET	KEAS	SOURCE OF STRESS	MANAGEMENT ACTIONS	PRIORITY	SEQUENCING	ESTIMATED COST	MONITORING
All	Native vegetation composition and cover	Invasive species, legacy land uses	Conduct periodic monitoring of and treatment for invasive vegetation	High	Ongoing and continuing	\$20,000 (~\$2,000/year).	Vegetation, photo points. Annual site walk to monitor plantings and invasive plants.
Riparian forest / native fish habitat	Floodplain connectivity and downed dead trees	Diking, filling, draining; land conversion	Evaluate potential value of removing/reconfiguring dredge spoils to create microtopography and planting sites on floodplain.	High	Medium term	\$50,000 to \$80,000 based on projects of similar scope.	Project dependent, but at a minimum should include photo points, channel cross sections, and longitudinal elevation profiles.
Riparian forest	Native shrub cover	Land conversion; invasive species	Remove invasive blackberry, reed canarygrass, butterfly bush and other nonnative species. Replant a diverse native tree and shrub community.	High, around pond and in cottonwood forest by entry point; Medium elsewhere	Near term	\$100,000-\$120,000 (~\$2,500/acre) for weed control, re-establishment of native shrub understory.	Vegetation, photo points. Annual maintenance for 4-5 years.
Upland forest	Shrub species composition; mature trees; standing and down dead trees	Land conversion; previous forest management; invasive species	Continue tree thinning to create variable densities and canopy openings. Re-establish native understory trees and shrubs, snags and downed logs. Buffer high use areas along the road. Evaluate costs and benefits of removing the house. Coordinate activities with ongoing weed treatments.	Medium	Short to medium term	\$80,000-\$100,000 (~\$2,500/acre) for weed control, thinning, re-establishment of native shrub understory. Does not include cost of house demolition.	Vegetation, photo points. Annual maintenance for 4-5 years.
Native turtle habitat	Species composition and competition; habitat structure	Altered hydrology; invasive species	Study population and habitat use; remove Douglas fir and augment native shrubs under cottonwood forest; maintain and create turtle basking and nesting habitat around pond and adjacent active beaver habitat within the river mainstem.	High	Near term	\$50,000 to \$80,000 for population and habitat studies, enhancement of nesting habitat around pond and installation of turtle basking structures/logs.	Periodic population composition and habitat use surveys, as well as project-specific presence/absence surveys for all work occurring within 1,600 feet of known turtle habitat.

Maps 7 and 8 show the distribution of natural area stewardship classes and present-day management status at Barton Natural Area, respectively. Stewardship class is a high-level, generalized land cover classification of all Metro properties, reflecting desired future condition. 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 from DFC, and “4” for areas currently at DFC. Areas lacking a conservation target are scored as “9” (unclassified). Table 8 defines Metro’s management status categories.

The majority of the Barton Natural Area has established forest cover and there are only small remnants of the former gravel mining operation on the floodplain. As a result, most of the property is classified as “consolidation.”

**Table 8: 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 DFC (tree thinning, mowing and weed control).
Refinement and long-term maintenance	4	Indefinite	Sites that have reached their DFC 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

Presently, public access to Barton Natural Area is neither discouraged nor actively promoted by Metro. The presence of the occupied home site and “No Trespassing” signs at the intersection of the access road with Southeast Bakers Ferry Road likely deters most would-be visitors to the site. There are presently no signs or trail maps to assist in wayfinding, or to inform the public on access rules/regulations.

While there may be increased public access demand at Barton Natural Area in the future, site improvements will require an in-depth analysis of opportunities and constraints for trails and public access. Because of the sensitivity of turtle habitat, the benefits of maintaining a house at the site (i.e., reduced traffic and prevention of negative impacts to turtles) may outweigh the value of additional



upland forest habitat made possible by removing it and restoring the building footprint. However, the house footprint also represents the most likely location for public access infrastructure in the event that access improvements become necessary.

## **SECTION 6: COORDINATION**

### **PUBLIC INVOLVEMENT**

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

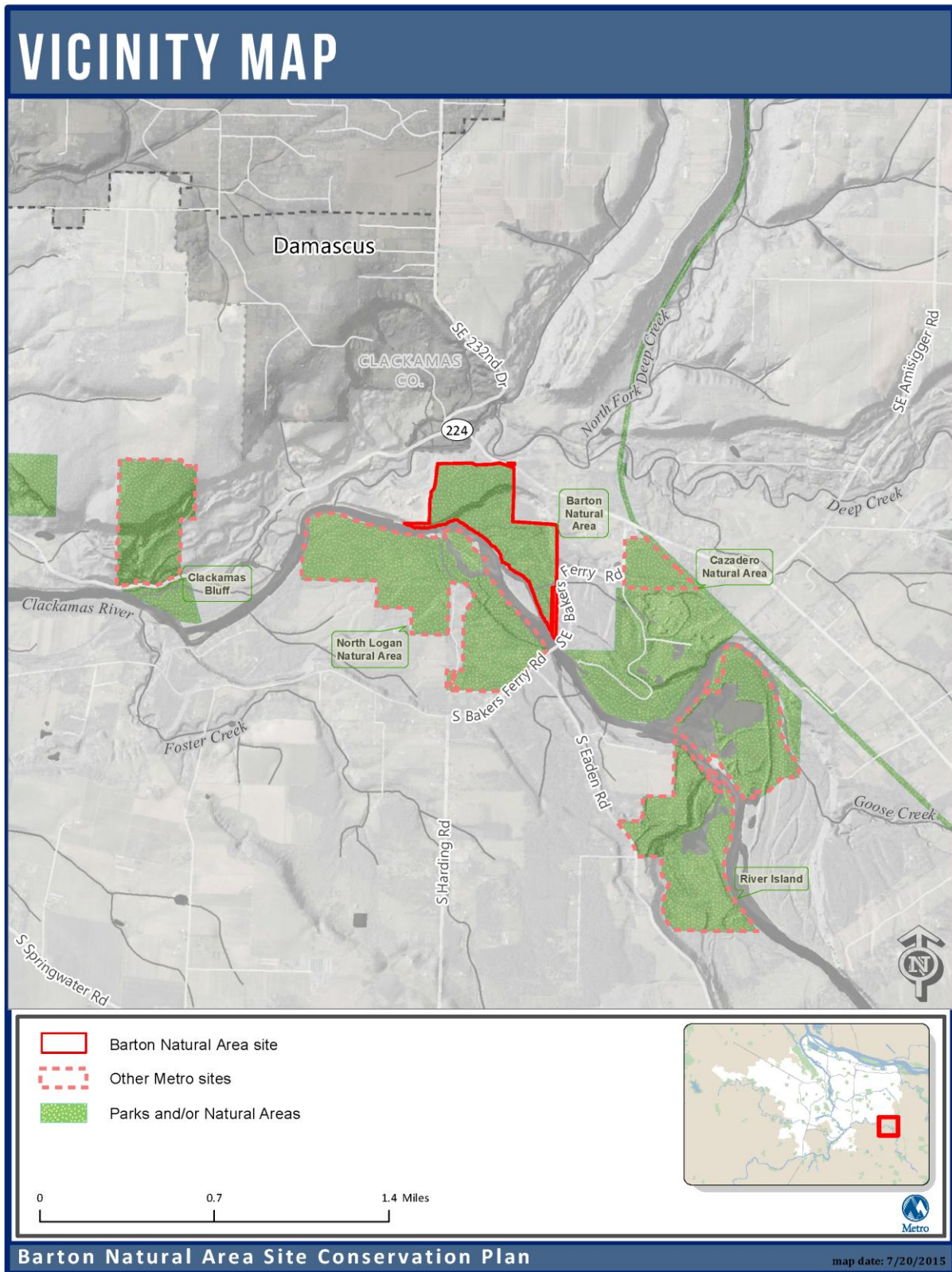
### **KEY STAKEHOLDERS AND PERMITTING AGENCIES**

- Clackamas River Basin Council
- Portland General Electric
- Oregon Department of Fish and Wildlife
- Clackamas Soil and Water Conservation District
- Clackamas County
- North Clackamas Parks and Recreation District

## **SECTION 7: MAPS**

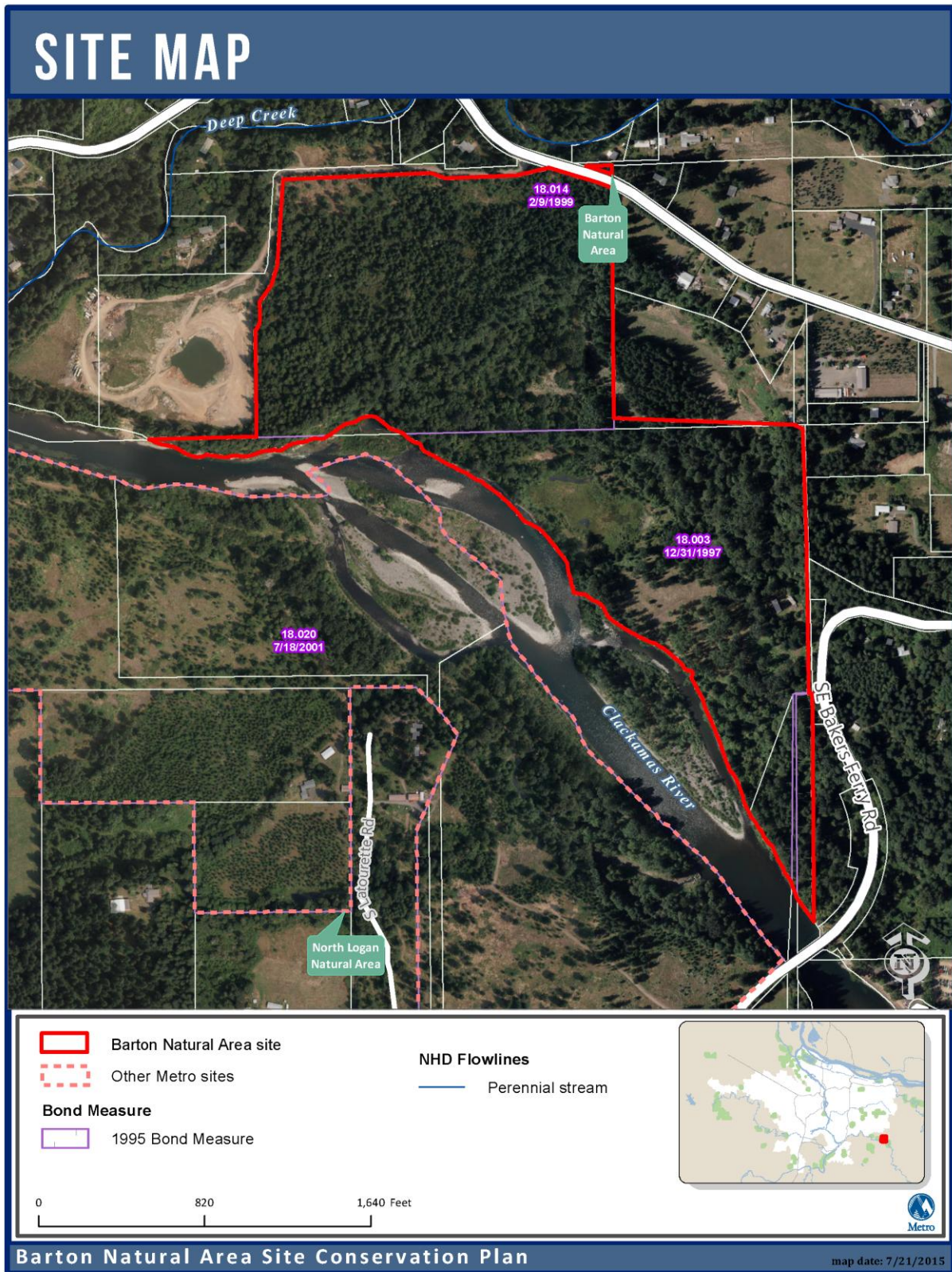
Map 1	Vicinity
Map 2	Site
Map 3	Soils
Map 4	Historical vegetation
Map 5	Current cover
Map 6	Conservation targets
Map 7	Stewardship class
Map 8	Management status

**Map 1**  
**Barton Natural Area vicinity**



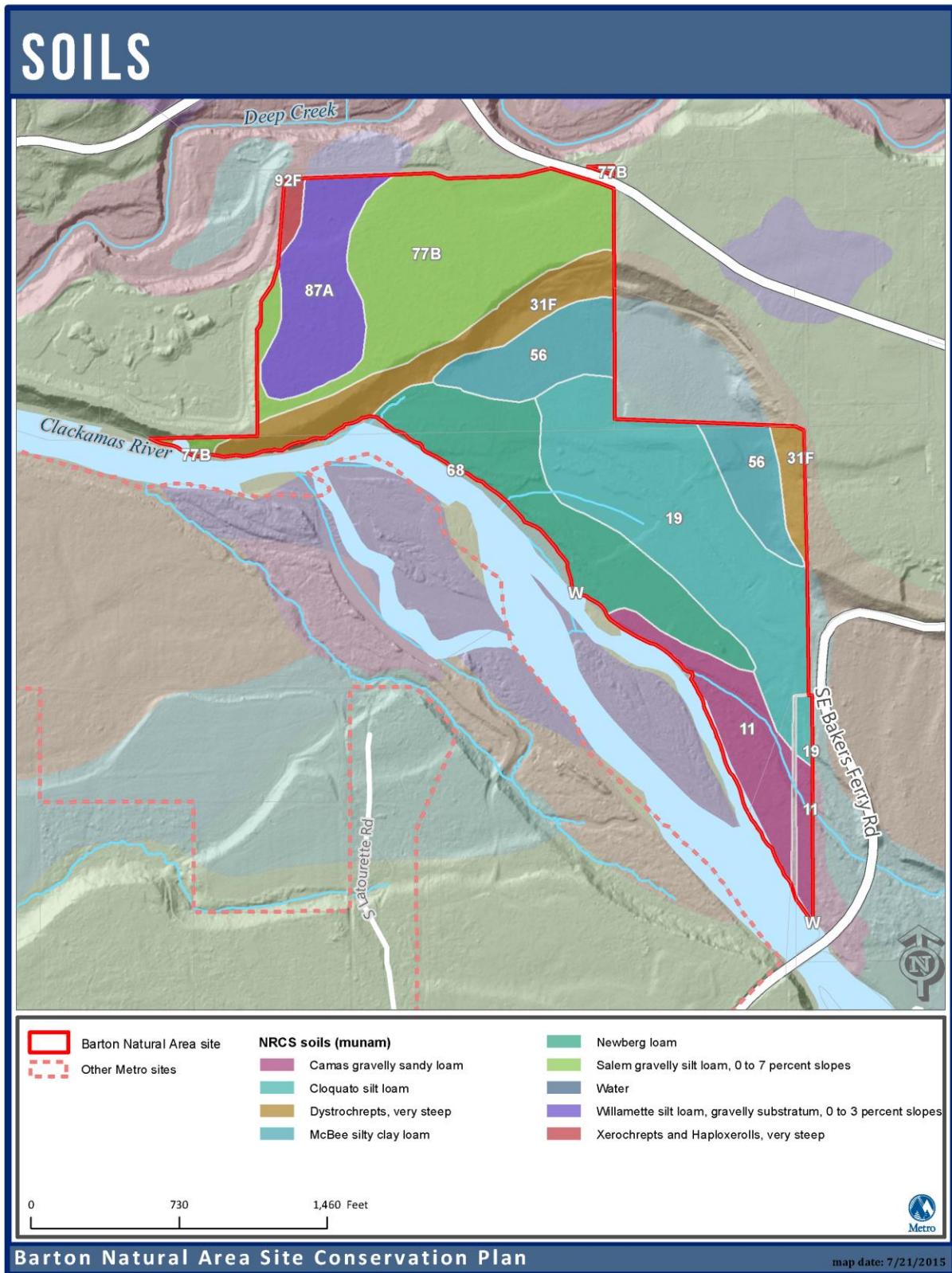


Map 2  
Barton Natural Area site

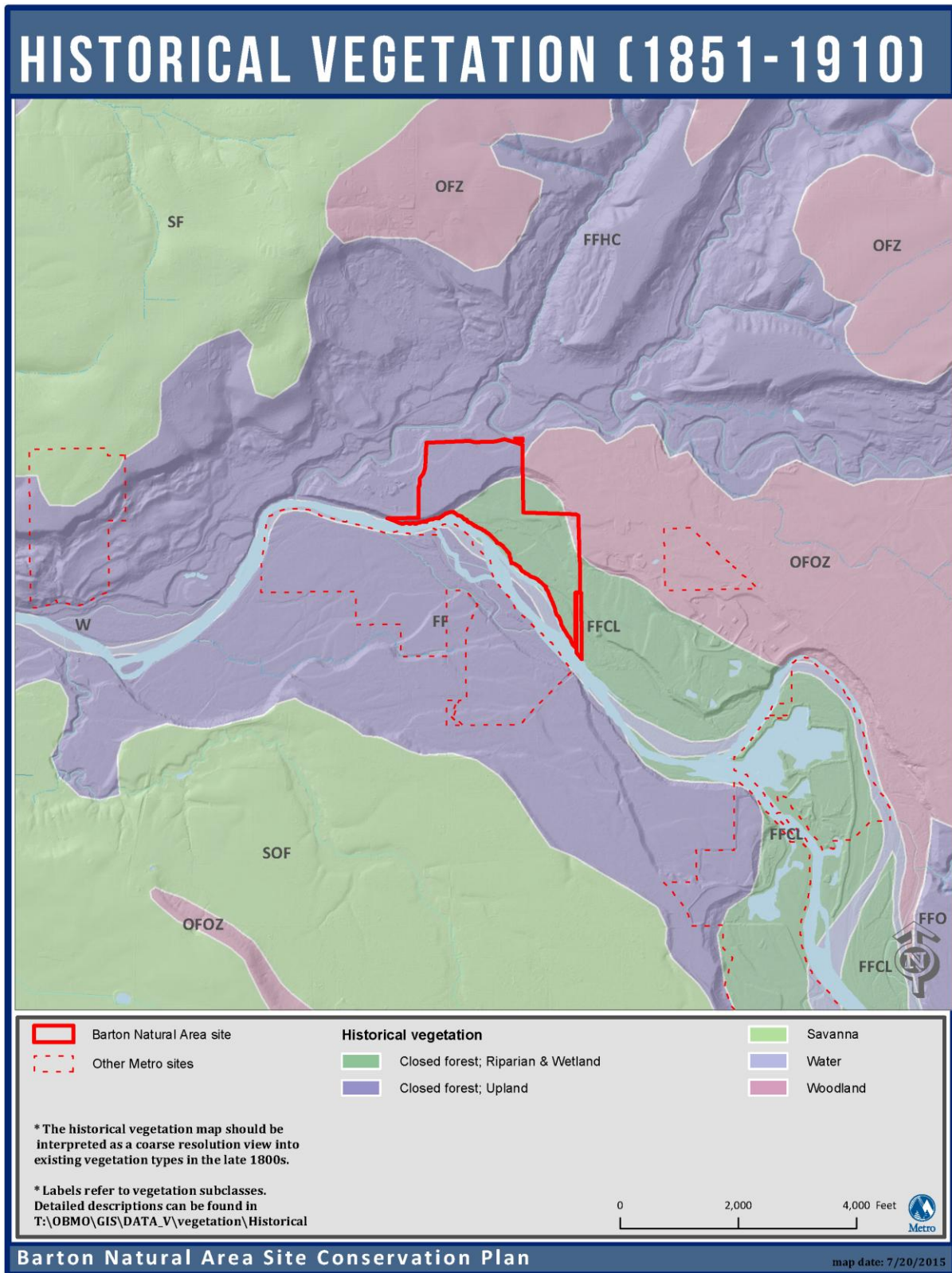




**Map 3**  
**Barton Natural Area soils**

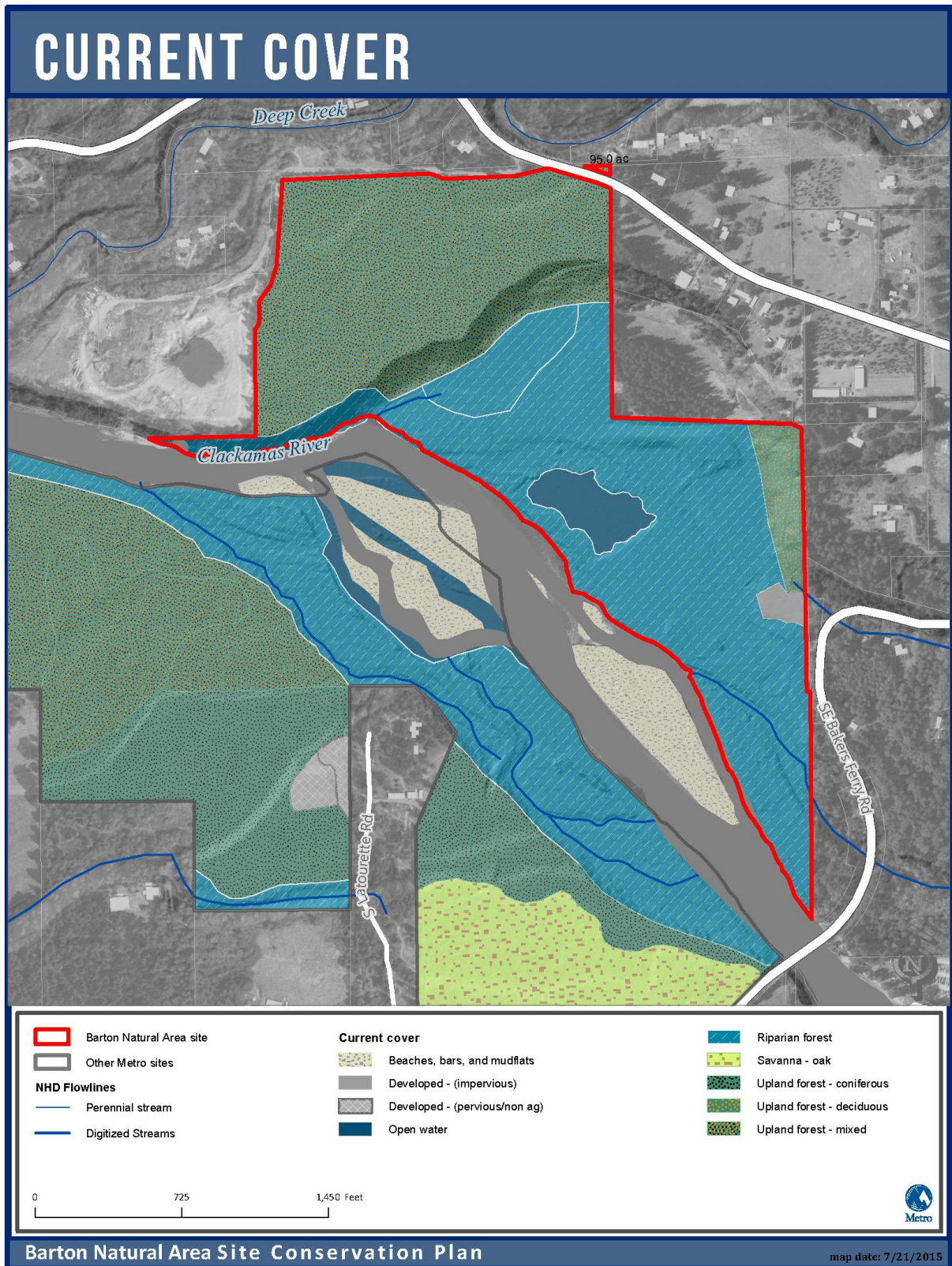


**Map 4**  
**Barton Natural Area historical vegetation**



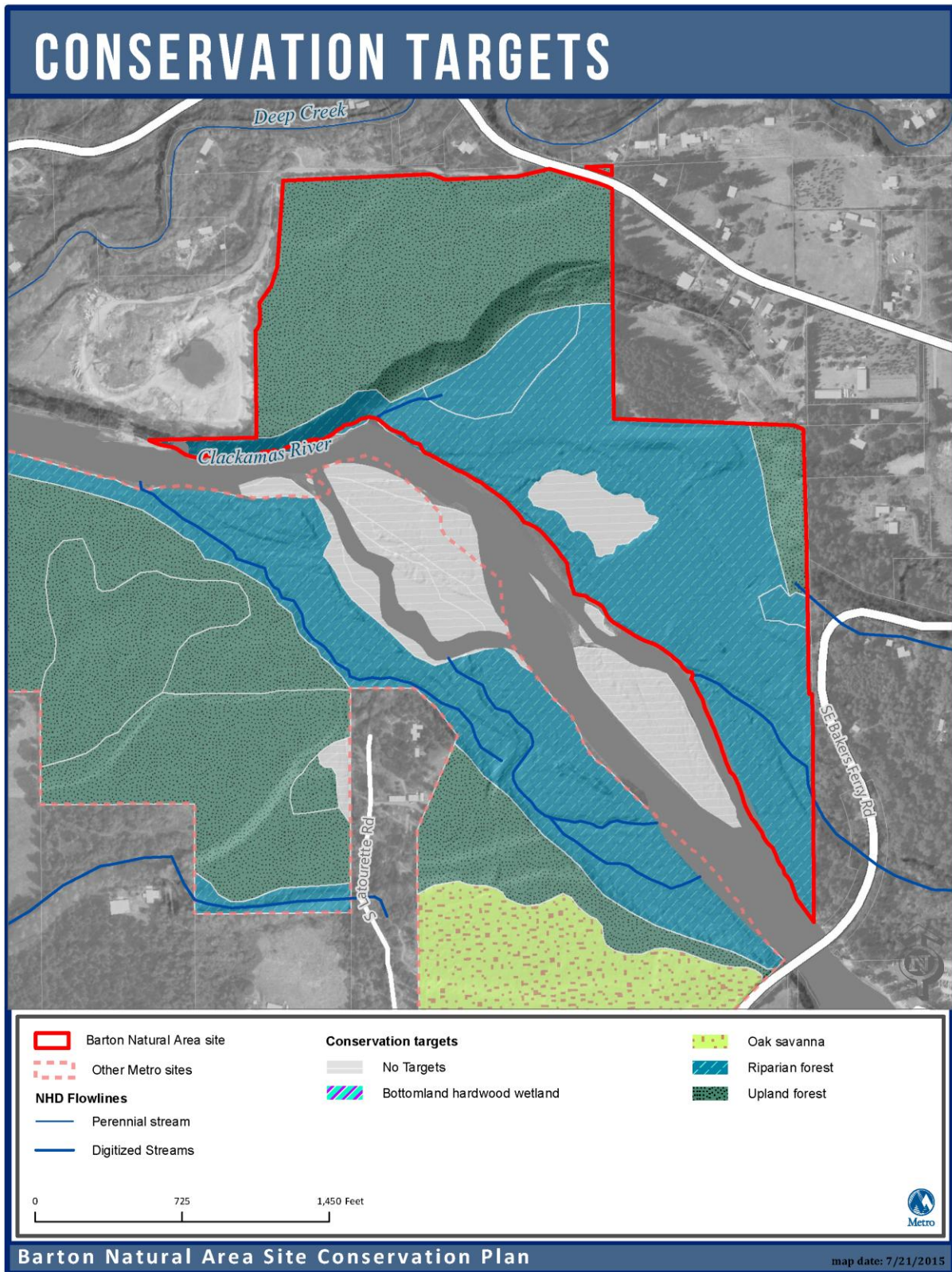


Map 5  
Barton Natural Area current cover



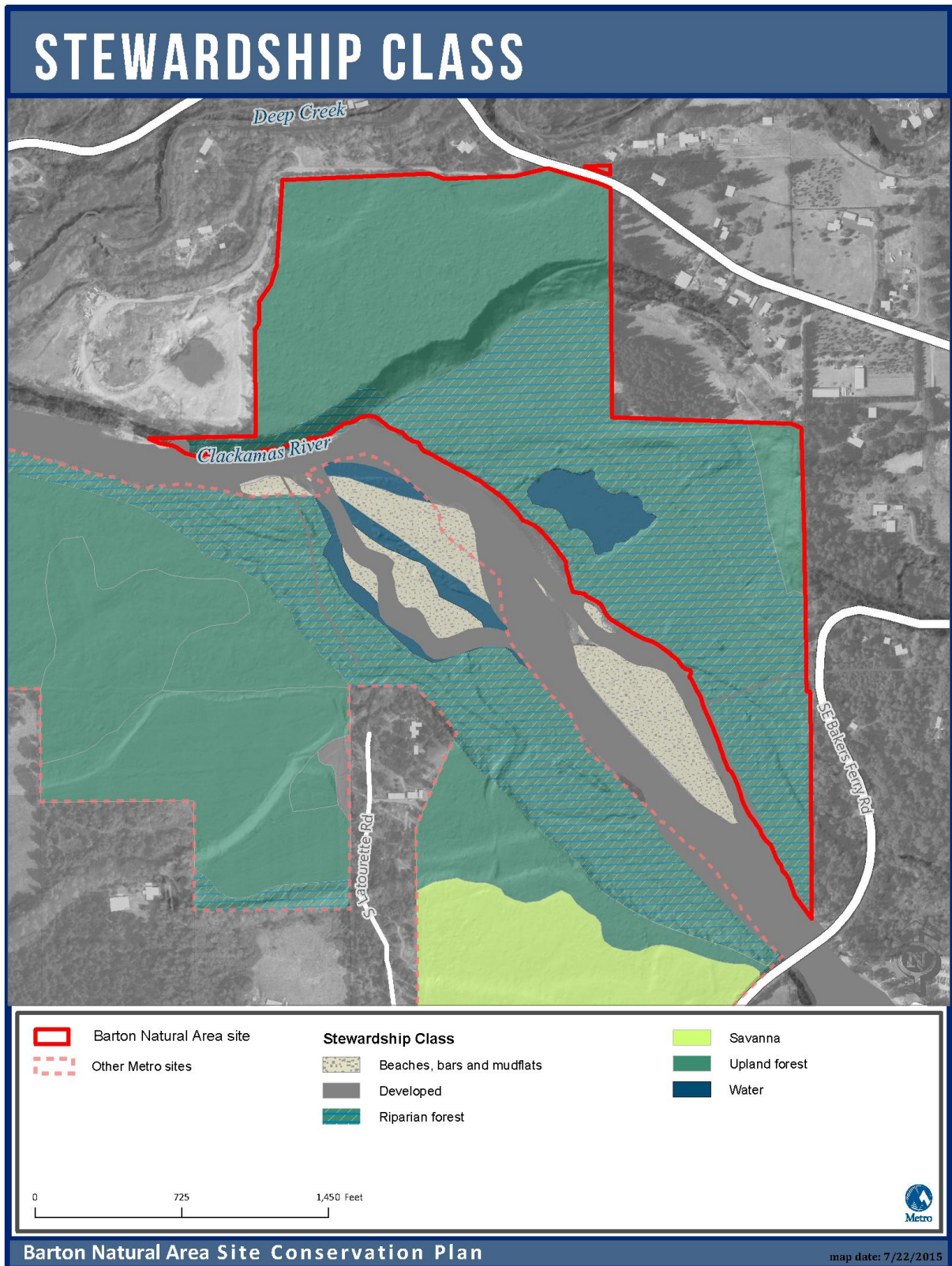


**Map 6**  
**Barton Natural Area conservation targets**

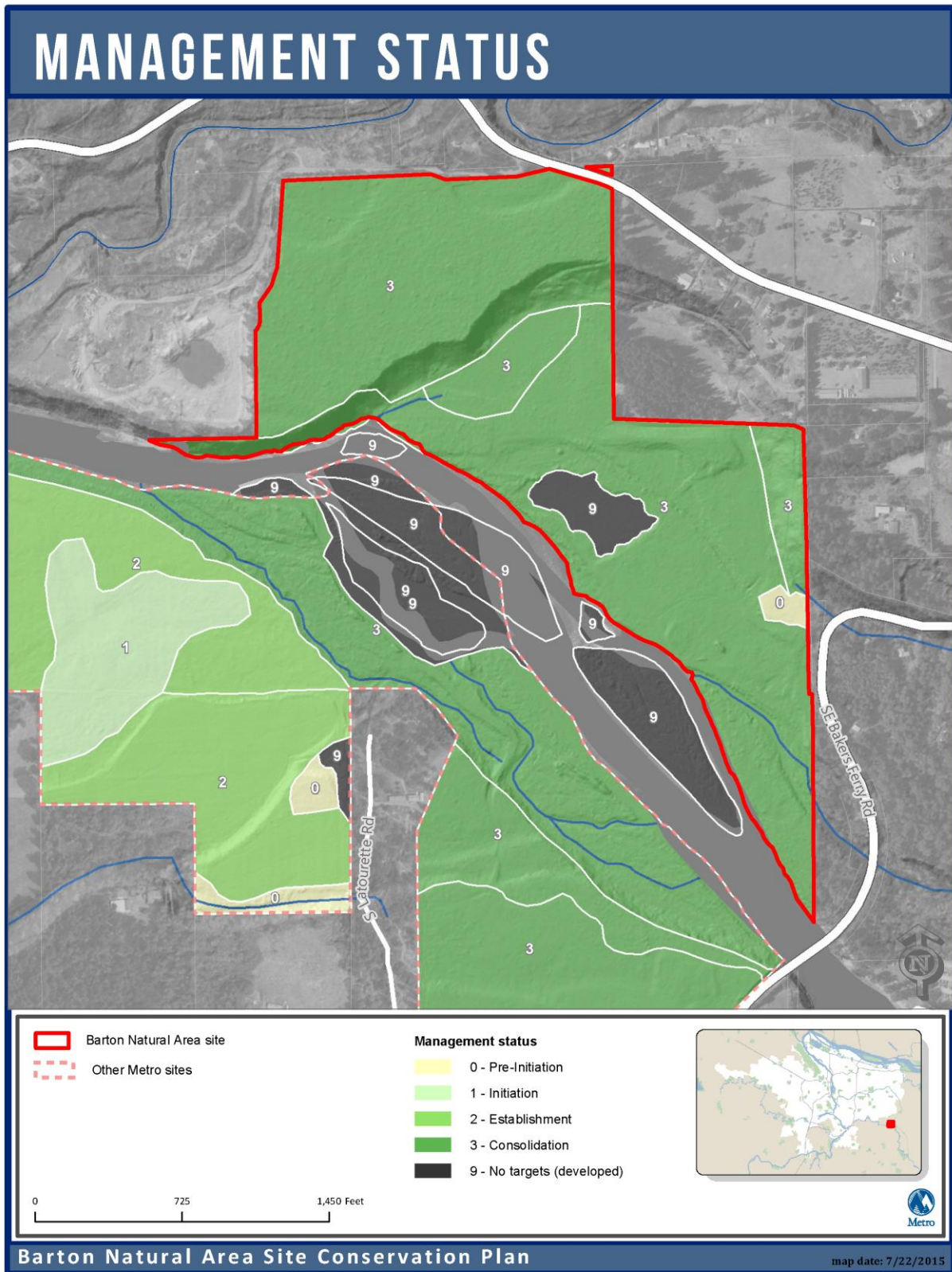




Map 7  
Barton Natural Area stewardship class



**Map 8**  
**Barton Natural Area management status**



## SECTION 8: REFERENCES

Christy, J.A., E.R. Alverson, M.P. Dougherty, S.C. Kolar, C.W. Alton, S.M. Hawes, L. Ashkenas, and P. Minear. 2011. GLO historical vegetation of the Willamette Valley, Oregon, 1851-1910. ArcMap shapefile, version 2011\_04. Oregon Biodiversity Information Center, Portland State University. [http://www.pdx.edu/sites/www.pdx.edu.pnwlamp/files/glo\\_willamette\\_2011\\_04.zip](http://www.pdx.edu/sites/www.pdx.edu.pnwlamp/files/glo_willamette_2011_04.zip)

Gerig, A. J. 1985. Soil survey of Clackamas County, Oregon. U.S. Department of Agriculture, Soil Conservation Service, Oregon Agricultural Experiment Station. 197 pages.

Hagel, C. Metro Keens Acquisition Stabilization Report

Rosenberg, D. and J. Gervais. Draft in review. Distribution of native turtles along the mid-section of the Clackamas River – final draft. Oregon Wildlife Institute, Corvallis, OR [www.oregonwildlife.org](http://www.oregonwildlife.org)

Runyon J, and E. Salminen. 2005. Clackamas basin summary fish populations and aquatic riparian habitat. Watershed Professionals Network, Boise, ID.

The Nature Conservancy. 2007. Conservation action planning handbook. Arlington, Virginia.

U.S. Geological Survey (USGS). 2014. Stream Stats program for Oregon, online at <http://water.usgs.gov/osw/streamstats/oregon.html>

Wampler, P. J. 2004. Contrasting geomorphic responses to climatic, anthropogenic, and fluvial change across modern to millennial time scales, Clackamas River, Oregon. PhD dissertation, Oregon State University, Corvallis.



## APPENDIX: SITE PHOTOS



Planted trees within historical floodplain beneath cottonwood at southeast corner of property.



Access road leading to riverside clearing within the riparian forest.





Engineered logjam at side channel confluence with Clackamas River mainstem.



Dredge spoils within riparian forest.





Looking downstream from top of bank. Note height of riverbank, close to end of access road.



Looking northwest across pond. Note dredge spoils piles in distance.





Small push-up dike lying between pond (left) and mainstem channel (right). Reed canarygrass in foreground.



Reed canarygrass infestation within open area on northwest side of pond.





Shallow, seasonal ponding within riparian forest area to immediate northwest of pond.



Bottomland hardwood wetland, with patches of reed canarygrass.





Channel draining bottomland hardwood wetland area – no flow at present.



River alcove at confluence of channel draining bottomland hardwood wetland. Small beaver dam with recent activity visible at outlet of large pool in distance.





Mature upland mixed forest on steep hillslope above river.



Patch of invasive blackberry within mixed upland forest on bluff above river bottomlands.





View of mixed upland forest interior.



View of mixed upland forest interior.





Diverse plant community found between pond and bottomland hardwood wetland: Oregon ash and black cottonwood with vine maple, grand fir, Douglas hawthorn, giant rush and tall Oregon-grape in understory.



Small wetland channel draining under SE Bakers Ferry Road onto Metro property to northeast of residence.