SITE CONSERVATION PLANS

Willamette Narrows Natural Area



Camas Cliffs Natural Area | Dec. 2013

Peach Cove Natural Area | May 2014

Rock Island Complex Natural Area | Jan. 2017

Willamette Narrows Forest Natural Area | TBD

Metro | *Making a great place*

Clean air and clean water do not stop at city limits or county lines. Neither does the need for jobs, a thriving economy, and sustainable transportation and living choices for people and businesses in the region. Voters have asked Metro to help with the challenges and opportunities that affect the 25 cities and three counties in the Portland metropolitan area.

A regional approach simply makes sense when it comes to providing services, operating venues and making decisions about how the region grows. Metro works with communities to support a resilient economy, keep nature close by and respond to a changing climate. Together, we're making a great place, now and for generations to come.

Stay in touch with news, stories and things to do.

www.oregonmetro.gov/connect

MAKING A GREAT PLACE

Metro

TABLE OF CONTENTS

3 Rock Island Complex Natural Area

Maps

4 Willamette Narrows Forest Natural Area

Appendices

NOTE: This is a partial document including just the Peach Cove Natural Area.

CHAPTER 2 | PEACH COVE FEN

Introduction

Peach Cove Fen is the only known wetland of its type remaining in the Willamette Valley. It features a floating peat mat and many rare plants; a complete species list of known occurrences is located in an appendix after the last chapter. Historical records indicate that similar sites on Sauvie Island and at Lake Labish (Marion County) were destroyed by agricultural development as early as 1914. The nearest known lowland occurrences of these communities in the Puget Trough-Willamette Valley ecoregion are in Lewis and Thurston counties, Washington. The fen and its surrounds are in relatively good condition, given their location within an exurban landscape. The uplands surrounding the fen include oak woodlands, conifer-hardwood forest and rare grassy balds, as well as roads and houses.

Occupying a depression scoured in bedrock by the Missoula Floods, the 20-acre shallow lake is fed by groundwater and precipitation, with the peat mat rising and falling with the water level. Fens tend to be less acidic and more nutrient-rich than bogs and typically have more diverse vegetation. It can take 10,000 years for a fen to form. Fens may become bogs if their peat builds to the point they are cut off from groundwater and associated nutrients.

Planning area

Peach Cove's planning area is defined generally by the site's boundaries, i.e., Metro ownership and adjacent Oregon Parks and Recreation land, but there are privately-owned properties nearby that share some habitat features and influence its long-term ecological viability and value in the larger landscape. These properties are important to the development of effective conservation strategies for Peach Cove Fen, and planning for Peach Cove is done within the context of nearby public and private lands. Detailed evaluations of other lands' stewardship classification, targets, etc. are beyond the scope of this plan.

Table 1 lists Metro's Peach Cove Fen Natural Area acquisitions under the 1995 and 2006 bond measures.

Table 1: Metro natural area bond purchased land

Property name (previous owner)	Acres	Bond year	Date acquired	Management
Pemberton	49.30	1996	11/09/1998	Metro
Kahre	13.29	2006	03/25/2009	Metro
Vlahos	26.00	2006	04/27/2012	Metro

Key staff

Elaine Stewart, scientist
Chris Hagel and Adam Stellmacher, lead natural resource specialists
Jeff Merrill, natural resource specialist
John Catena and Kristina Prosser, natural resource technicians
Katy Weil, wildlife monitoring coordinator
Tim Richard, parks and natural areas planner
Laurie Wulf, property manager
Tom Heinicke, negotiator

Key private landowners

Alexander, Peach Cove Road
Neighbor; currently an unwilling seller, albeit a with a key property

Forest Cove Road Neighborhood Association
c/o Bonni Canary
bccdlc@gmail.com

Forest Cove Road Association
Mike Wegener, President
mike.r.wegener@intel.com

Existing planning documents

1. Oregon white oak (*Quercus garryana*) release work was completed most recently in 2013. Funded by an OWEB grant, the relevant files can be found here: M:\suscntr\Natural Areas and Parks\Regional Properties\Willamette Narrows TA\Stewardship-Property Management\Willamette Narrows OWEB PROJECT 2011.
2. A target area assessment for the Willamette Narrows can be found here: M:\suscntr\Natural Areas and Parks\Regional Properties\Willamette Narrows TA\Planning\Target Area Assessment.

Site description

At nearly 100 acres, Peach Cove Fen Natural Area is a mosaic of upland and riparian forest, oak woodland, forested wetland and the fen. The north and west sides of the site are bordered by roads and the east boundary fronts the Willamette River. To the south, Peach Cove Road makes up about half the boundary and the other half is oak woodland and pasture owned by a neighbor. Peach Cove Fen includes about 13 acres of upland forest owned by Oregon Parks and Recreation Department and managed by Metro under intergovernmental agreement. A house remains on Metro's property and is rented by Metro's property management team. Access to the site is via Riverwood Road where Petes Mountain Road and Mountain Road intersect (see maps at end of this chapter). Visitors can park at the rental house at the south side off Peach Cove Road or pass through the gate on Forest Cove Road to enter the site from the north or west.

Several soil types are present at Peach Cove Fen and they influence potential habitats on the site (Table 2). Soils range from rocky escarpments to deeper soils. Besides the fen, the rocky bluffs are the site's most distinctive feature.

Table 2: Soils present at Peach Cove Fen Natural Area

Map soil symbol	Map unit name	Description
3	Amity silt loam	Very deep, somewhat poorly drained soils on broad terraces at elevations of 150 to 400 feet. Somewhat poorly drained; slow runoff; moderately slow permeability. Slopes 0-3%.
53B	Latourell loam	Deep, well drained, summer-droughty soil on terraces. Moderate permeability with effective rooting depth of 60 inches or more. Runoff is slow, with little hazard of water erosion. Slopes 3-8%.
56	McBee silty clay loam	Deep, moderately well drained soil on floodplains. Moderate permeability with slow runoff with slight hazard of water erosion. Rooting depths are 60 inches or more. Summer droughty, subject to brief periods of winter flooding. Slopes 0-3%.

Map soil symbol	Map unit name	Description
76B	Salem silt loam	Deep, well drained soil of stream terraces. Moderate permeability with slow runoff and slight hazard of water erosion; droughty in summer. Effective rooting depth is 24-36 inches. Slopes 0-7%.
89D	Witzel very stony silt loam	Shallow, well-drained, droughty; depth to bedrock is 12-20 inches. Permeability is moderately slow and erosion hazard is moderate. Slopes 3-40%.
92F	Xerochrepts and Haploxerolls	On terrace escarpments. Deep and well-drained, moderate to moderately slow permeability, and rooting depths are 40-60 inches or more. Runoff is rapid and erosion hazard is severe. Slopes 20-60%.
93E	Xerochrepts, rock outcrops	Well-drained and shallow to moderately deep with rooting depth from 15-40 inches. Permeability is slow to moderately slow, and runoff and erosion risk are also moderate. Droughty in summer. Slopes 0-30%.

Recent management history

The majority of Metro's site management has occurred in the last few years with the purchase and stabilization of the Kahre and Vlahos parcels and the provision of funds from Oregon Watershed Enhancement Board for Oregon white oak release on the site. More than 30 acres of Oregon white oak woodland were released from competing Douglas-fir (*Pseudotsuga menziesii)* and bigleaf maple (*Acer macrophyllum)* in fall 2012. Hundreds of trees were felled, and many of them were moved into nearby upland and riparian forest units to provide down wood for wildlife habitat and nutrient cycling. Dozens more trees were partially limbed and topped for snag creation.

The Vlahos parcel includes the field on the east side of Peach Cove and is bordered to the north by OPRD land. Stabilization work included tearing down an old house and some minor structures and planting the field with riparian forest plants. Prior to planting the field, it was stocked with tree stems from the oak release project to accelerate the provision of down wood for the very young forest. Three large-diameter stems, two *Pseudotsuga menziesii* and one *Acer macrophyllum*, were placed vertically in the field to provide snags and structural complexity.

The Vlahos piece included debris from years of human habitation. Bottle dumps on site were routinely vandalized in 2013 by people digging in search of old bottles. Vandals destroyed nearby plantings with their activities. As part of federal compliance associated with state wildlife grant funding connected to the oak release work, a firm completed an archaeological investigation at Peach Cove. The bottle dumps were not deemed significant and Metro will make the piles less accessible in 2014, probably with a combination of cleaning up and reburying the material.

The Kahre parcel includes the rental house on Peach Cove Road. The house was deemed too valuable to tear down, and Metro's acquisition team discussed partitioning and selling it. As will be discussed later under threats and strategies, Metro must carefully consider whether it wants to lose control of the house because it is located on a septic system. Even though the system appears to drain away from the fen, groundwater movement is not well understood and nutrients from septic systems could threaten its water quality. Stabilization work at Kahre included removal of a gazebo and asphalt trail and installation of woody plants in the area next to the fen. Dozens of tree stems were placed in the mature conifer forest as they were cut and removed from the oak release area. Southwest portions of Peach Cove were infested with ivy and this was treated for two years.

Table 3: Metro property stewardship classification (acres)

	0 Pre-initiation	1 Initiation	2 Establishment	3 Consolidation	4 Long-term maintenance
Fen					
When we bought the property	0	0	0	0	8
Present condition	0	0	0	0	8
Oak woodland					
When we bought the property	31	0	0	0	0
Present condition	0	0	31	0	0
Upland forest					
When we bought the property	0	0	0	35	0
Present condition	0	0	0	35	0
White Rock Larkspur					
When we bought the property	0	0	0	37	0
Present condition	0	0	0	37	0
Forested wetland					
When we bought the property	0	0	0	2	0
Present condition	0	0	0	2	0
Riparian forest					
When we bought the property	20	0	20	0	0
Present condition	20	0	20	0	0

Access and recreation

Public access

Peach Cove was designated a habitat preserve during an internal process with parks and natural areas planning, science and land management staff. The 2011 report, *Metro's portfolio of natural areas, parks and trails: opportunities and challenges*, page 58, describes habitat preserves:

> On a number of properties, sensitive species and fragile habitats preclude all but the lightest use by people. Trails may be present, but are fenced off and gated. People may experience the site in a group with an educator or as part of a volunteer work party. Seasonal access may be possible based on wildlife patterns of use. A peripheral pathway may be included, avoiding sensitive areas. Sometimes other parks are located nearby, so Metro's holdings are not needed for public access. These sites are generally not publicized, except as conservation areas without access.

Current public use at Peach Cove is limited to staff-guided tours and volunteer work. Volunteers assist Metro on this site with bird monitoring, plant inventories, amphibian egg mass monitoring and seed collection. Parks and natural areas planning staff are presently working on a new framework for evaluating public access on Metro properties using a visitor experience filter. The visitor experience analysis will be provided as an appendix to this plan when it is available.

Programmatic access (education and volunteers)

The site contains the only known fen in the Willamette Valley and the only known Oregon populations of *Howellia aquatilis*, listed as Threatened under the federal Endangered Species Act.

Many other rare flora occur on the site, associated with the oak woodlands. Protection and ongoing restoration are critical to the long term health and vitality of the fen and oak woodland habitats. Other sites in the region containing oak woodlands that are open to the public include Camassia Preserve, Canemah Bluff Natural Area, Cooper Mountain Nature Park and Graham Oaks Nature Park.

Access to Peach Cove is limited to supervised volunteer work and site tours. For example, Metro and NRCS conduct training on *Howellia* identification including a site visit to Peach Cove to see the plant *in situ*. Volunteers with Metro's Native Plant Center visit the site regularly in spring and summer and collect seeds for habitat restoration projects at Peach Cove and elsewhere in Metro's portfolio. One volunteer botanist visits the natural area frequently and has identified more than 600 plants in this target area, many of them rare (see Table 4, below).

Metro's volunteer wildlife monitoring program provides avian point count data, tracking use of the oak woodland habitat during nesting season. They also survey for pond-breeding amphibians in early spring. These wildlife surveys are important indicators of habitat function on the site, complementing vegetation surveys that indicate habitat structure.

Archeological resources

An archeological survey was completed in 2013 within the oak project area as part of federal compliance for a state wildlife grant. The survey was conducted by Willamette Cultural Resource Associates, Ltd. No historic or pre-contact archeological materials were found, other than some recent materials that were not deemed significant. There are local tales of bootlegging during Prohibition, including a stint in Leavenworth prison for an ancestor of the Vlahos family. Although interesting, this was not considered important enough to merit archaeological documentation. The survey report can be found on the Metro network in the Willamette Narrows section.

Natural resources of special interest

The fen, floating *Sphagnum* mat, oak woodlands and diversity of rare flora distinguish Peach Cove from all other sites in Metro's portfolio. Riparian and upland forests provide additional habitat diversity and partially buffer the sensitive resources from surrounding land uses. Primary resources for the discussion that follows include a 2-page discussion of the fen by John Christy dated 1998 (unpublished) and the Washington Department Natural Resources' Ecological Integrity Assessments for North Pacific Bog and Fen (Ver. 2.22.2011).

The accumulation of peat – undecomposed or slightly decomposed organic matter contributed by *Sphagnum,* sedges, shrubs and/or brown mosses – is the primary ecological driver distinguishing bogs and fens from other wetland types in the region. Peatlands can be classified by their pH and associated vegetation:

Bog (acidic) ⟶ Poor fen ⟶ Rich fen ⟶ Very rich fen (basic)

Peach Cove Fen appears to have characteristics of "poor fens" and "rich fens." The floating mat is surrounded by open water (a third wetland type) used by waterfowl, pond-breeding amphibians and other wildlife. For the purposes of this site conservation plan, the floating mat and open water will be referred to as the fen, since that is the commonly accepted name for the site.

Bogs and poor fens have these characteristics:

- *Sphagnum* moss dominates the floating mat
- They are acidic to highly acidic
- Conditions are nutrient-poor
- Deep peat keeps the rooting zone above groundwater; plants are reliant on precipitation for water and nutrients

Rich and very rich fens have:

- Sedges and shrubs dominating the floating mat
- They are somewhat to highly basic
- Conditions are relatively nutrient-rich
- Groundwater discharges within the rooting zone provide water and nutrients to plants

Stable groundwater inputs are crucial for continued integrity of the fen. Any disturbances that affect water quality or quantity are a threat. Potential or actual threats include groundwater pumping, improper placement or operation of septic systems, water diversions, roads, etc. Peach Cove Fen's floating mat is dominated by an extensive shrubland of Douglas spiraea (*Spiraea douglasii*) with a continuous, saturated mosaic of lawn and hummocks of peat moss (*Sphagnum squarrosum, S. palustre* and *S. mendocinum*). The hummocks extend up to 18 inches tall and are unknown elsewhere in the state except in coastal bogs. The extensive shrubs on the floating mat can be indicative of a rising water table in recent decades; because they may shade *Sphagnum* on the hummocks, monitoring is important.

Several plants found at Peach Cove Fen Natural Area are the only remaining known occurrences in the Willamette Valley, and others are quite rare in our region (Table 4). These rare plants tend to be associated with the fen and its floating mat, thin rocky outcrops and oak woodland. Ongoing plant inventory work by Phil Gaddis, co-author of Urbanizing Flora, includes about 70 species that are rare here and a number of species not previously found in our region. Where appropriate, specimens are provided to Hoyt and/or Portland State University herbaria to confirm species identifications and to document locations where they were found.

The following list includes species that are considered rare by one or more authorities:

Table 4: Rare species known to occur at Peach Cove

	ORBIC list	Federal status	Urbanizing Flora (2009)
Agrostis hallii			Last collected at Albina in 1902
Aphanes occidentalis			
Arctostaphylos uva-ursi			Rare – few natural occurrences
Asplenium trichomanes			
Botrychium multifidum			
Brodiaea coronaria			
Carex cusickii			Rare – one other known site in our area
C. exsiccata			Occasional to scarce in our area
C. inops			Rare – one other known site in our area
C. lenticularis var. *limnophila*			No recent reports from our area
C. rossii			No recent reports from our area
C. subfusca			Not in flora – new discovery

	ORBIC list	Federal status	Urbanizing Flora (2009)
Clarkia amoena			
Collinsia grandiflora			Uncommon in grassy balds
Collomia heterophylla			
Comandra umbellata ssp. *californica*			Rare historically and rare today
Conioselinum gmelinii (pacificum)			Known only from Narrows
Crepis atribarba			Not in flora – new discovery
Danthonia spicata			Rare – one other known site in our area
Delphinium nuttallii ssp. *ochroleucum*			
(previously *D. leucophaeum)*	1	SOC	Rare – endemic to our area.
Dichanthelium acuminatum ssp. *fasciculatum*			Rare – only two other known sites
Drosera rotundifolia			Not in flora – new discovery
Dryopteris arguta			Rare – three other known sites in area
Dulichium arundinaceum			Known only from Peach Cove
Eriogonum compositum var. *compositum*			Known only from Willamette Narrows
Eurybia radulina			Rare – one other known site in our area
Festuca occidentalis			Rare – one other known site in our area
F. roemeri			Rare – only two other known sites
Fritillaria affinis			Rare – three other known sites in area
Gratiola ebracteata			
G. neglecta			
Heterocodon rariflorum			Rare – one other known site in our area
Heuchera grossulariifolia			No recent reports from our area
Howellia aquatilis	1	T	One of Oregon's rarest native plants
Hypericum anagalloides			Scarce in our area
Juncus acuminatus			Scarce to locally abundant
J. brachyphyllus			Not in flora – new discovery
J. effusus ssp. *pacificus*			
Lathyrus holochlorus	1	SOC	
Ligusticum apiifolium			Infrequent in open oak woodlands
Lithophragma parviflorum			Rare
Lomatium dissectum			Rare – one other known site in our area
L. utriculatum			Known only from Narrows
Luzula comosa var. comosa			No recent reports from our area
Lycopus uniflorus			
Melica harfordii			No recent reports from our area
Menyanthes trifoliata			
Microsteris gracilis			
Mimulus moschatus			
Navarretia intertexta			Not previously recorded in our area
Nemophila menziesii			No recent reports from our area
Osmorhiza occidentalis			Known only from the Narrows
Pentagramma triangularis			
Piperia elegans			Rare – one other known site in our area
Polygonum douglasii ssp. *majus*			No recent reports from our area
Polystichum imbricans			Rare – one other known site in our area
Potamogeton richardsonii			No recent reports from our area
Psilocarphus tenellus			Not in flora – new discovery
Rorippa curvipes var. *truncata*			No recent reports from our area
Rubus leucodermis			
Rupertia physodes			Rare – only two other known sites

	ORBIC list	Federal status	Urbanizing Flora (2009)
Scutellaria lateriflora			
Sedum spathulifolium			
Stellaria borealis var. *sitchana*			Rare – only two other known sites
S. crispa			Rare historically and rare today
Triodanis perfoliata			
Utricularia vulgaris ssp. *macrorhiza*			Known only from Peach Cove
Woodsia oregana			Not in flora – new discovery

As with Camas Cliffs, few rare wildlife species are presently known from Peach Cove. Comprehensive surveys have not been conducted to date. The oak woodland habitat can accommodate several species of interest, including:

- Western gray squirrel (*Sciurus griseus*)
- Slender-billed (white-breasted) nuthatch (*Sitta carolinensis aculeate)*
- Acorn woodpecker (*Melanerpes formicivorus)*
- Lewis's woodpecker (*Melanerpes lewis)*

Conservation targets

There are six conservation targets for Peach Cove:

1. Fen (mapped as "shrub-dominated wetland" in Metro's GIS)
2. Oregon white oak woodland
3. Upland forest
4. White rock larkspur (*Delphinium nuttallii* ssp. *ochroleucum*, previously *D. leucophaeum*)
5. Forested wetland
6. Riparian forest

Current and desired future condition of conservation targets

Table 5: Non-technical status and desired future condition of targets

Target	Current condition	Desired future condition
Oak woodland (34 ac.)	Two oak release projects resulted in healthy structure in the tree and shrub layers. The herbaceous layer is in mixed condition with many rare plants, mixed with non-native species, especially grasses.	Continued good condition of tree and shrub layers. Reduced exotic plants and greater cover of native grasses and wildflowers, without losing any rare species.
Upland closed forest (34 ac.)	Generally good habitat structure on Metro property but extensive ivy on OPRD land. Oak release provided ample down wood for understory.	Retain habitat structure; reduce invasive plant cover on OPRD land.
White rock larkspur	Very good; probably hundreds of plants (if not more than a thousand) distributed throughout the site.	Continued very good condition.
Fen (8 ac.)	Generally good, although exotic birch and hawthorn trees are established. *Howellia aquatilis* occurs throughout shallow, open water.	Good condition with no exotic woody plants. Continued persistence of rare plants on the floating mat, including those characteristic of bogs and of fens.

Target	Current condition	Desired future condition
Forested wetland (2 ac.)	Good condition with populations of *Howellia aquatilis;* however, reed canarygrass is spreading.	Very good condition with canarygrass controlled.
Riparian forest (20 ac.)	Most of the forest is 1-2 years old but is establishing nicely. There are some very large cottonwoods along the river.	Continuing good establishment of young forest, retention of cottonwoods and control of exotic woody plants.

Table 6a: Key ecological attributes for fens

Category	KEA	Indicator	---------- Indicator rating ----------				Current status	Short term goal	Long term goal
			Poor	Fair	Good	Very good			
Condition (includes floating mat and open water)	Relative cover native plant species	Relative percent cover	Cover of native plants <50%	Cover of native plants 50 to <79%	Cover of native plants 80-95%	Cover of native plants 95-100%	Unknown	Good	Very Good
Condition	Organic matter accumula-tion	Thickness and integrity of the surface organic soil horizons	Surface organic horizon's thickness has been reduced by > 50%; moss layer has been mostly removed	Surface organic horizon's thickness has been reduced by > 25%; moss layer has been partially removed		Surface organic horizons are present and undisturbed	Unknown	Very Good	Very Good
Condition	Hydrology	Water source	Water flow has been substantially diminished by human activity	Source is primarily urban runoff, direct irrigation, pumped water, artificially impounded water, or other artificial hydrology	Source is mostly natural, but site directly receives occasional or small amounts of inflow from anthropogenic sources	Source is natural or naturally lacks water in the growing season; no indication of direct artificial water sources	Good?	Good	Very Good
Condition	Physico-chemical	Water quality	Widespread evidence of negative indicators; algae mats may be extensive; water may have a strong greenish tint, sheen or turbidity; bottom difficult to see due to surface algal mats and other vegetation blocking light to the bottom	Negative indicators or wetland species that respond to high nutrient levels are common; water may have a moderate greenish tint, sheen or other turbidity with common algae	Some negative water quality indicators are present, but limited to small and localized areas; water may have a minimal greenish tint or cloudiness, or sheen	No evidence of degraded water quality; water is clear; no strong green tint or sheen	Unknown	Very Good	Very Good
Landscape context	Edge condition	Buffer width	Average buffer width is <49 m, after adjusting for slope	Average buffer width is 50-99 m, after adjusting for slope.	Average buffer width is 100-199 m, after adjusting for slope	Average buffer width of occurrence is >200 m, adjusted for slope	Good	Good	Good

Table 6b: Desired condition for oak woodland at Peach Cove

Category	KEA	Indicator	---------- Indicator rating ----------				Current rating	Short term goal	Long term goal
			Poor	Fair	Good	Very good			
Size	Habitat area	Number of 8 ha (20 acre) units: based on combination of white-breasted nuthatch, acorn woodpecker and gray squirrel territory size	<16 ha (40 ac) oak woodland or oak forest in functionally contiguous patch (multiple patches totaling 16 ha, or 40 acres, located in close proximity)	16-49 ha (40-120 ac) oak woodland or forest in a functionally contiguous patch	49-162 ha (120-400 ac) oak woodland or forest in a functionally contiguous patch	>162 ha (400 ac) of oak woodland or oak forest in a functionally contiguous patch	Poor	Poor	Good (including nearby private and public sites)[1]
Condition	Native grass and forb presence	Native species richness (for the patch)	<20 native herbaceous plant species with high and moderate fidelity to oak woodland occur within the patch	20-39 native herbaceous plant species with high and moderate fidelity to oak woodland occur within the patch	40-59 native herbaceous plant species with high and moderate fidelity to oak woodland occur within the patch	>60 native herbaceous plant species with high and moderate fidelity to system types present within the patch	Fair to Good	Good	Very Good
Condition	Native grass and forb abundance	Frequency of native herbaceous species in 1 sq m (11 sq ft) quadrats	< 3 native high and moderate fidelity herbaceous prairie species occurring with >50% frequency and < 9 additional species occurring with at least 10% frequency	At least 3 native high and moderate fidelity herbaceous prairie species occurring with >50% frequency and at least 9 additional species occurring with at least 10% frequency	At least 3 native high and moderate fidelity herbaceous prairie species occurring with >75% frequency and at least 9 additional species occurring with at least 25% frequency	At least 7 native high and moderate fidelity herbaceous prairie species occurring with >75% frequency and at least 15 additional species occurring with at least 25% frequency	Poor	Fair	Good
Condition	Native grass and forb abundance	Relative cover of native forb and grass species	<20% of total herbaceous cover	20-30% of total herbaceous cover	30-50% of total herbaceous cover	>50% of total herbaceous cover	Poor?	Fair	Good
Landscape context	Proximity (distance) to other target habitat patches	Number of habitat patches $\geq$ 12 ha (40 acres) within 2 km (1.25 mi)	No patches within 2 km (1.25 mi)	1 patch within 2 km (1.25 mi)	2 patches within 2 km (1.25 mi)	At least 3 patches within 2 km (1.25 mi)	Fair	Good	Good

[1] Privately owned oak woodland immediately to the north of Peach Cove connects it to oak woodland at Camas Cliffs Natural Area. If the intervening acreage is converted from oak woodland to another habitat or land use, the current rating of "fair" will drop to "poor".

Table 6c: Desired condition of upland forest habitat at Peach Cove

Category	KEA	Indicator	Indicator rating				Current status	Short term goal	Long term goal
			Poor	Fair	Good	Very good			
Condition	Vegetative structure: native tree and shrub layer	% native tree and shrub canopy cover (combined)	<25% cover	25-50% cover	50-75% cover	>75% cover	Unknown	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	Good	Good	Very Good
Condition	Standing and down 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 to Good	Fair to Good	Very Good

Table 6d: Desired condition for *Delphinium nuttallii ssp. ochroleucum*

Category	KEA	Indicator	Indicator rating				Current status	Short term goal	Long term goal
			Poor	Fair	Good	Very good			
Size	Extent of suitable habitat for the species	Area of habitat	Continued loss	Maintained at current size	Increased extent	Increased extent and in new habitat area	Good	Very Good	Very Good
Condition	Number of patches or plants	Each	Not present	≤1 patch/5 acres of at least 1 sf OR <30 plants/10 ac of habitat	1-3 patches/5 acres of at least 1 sf of habitat OR 30-59 plants/0 acres of habitat	>3 patches/5 acres of at least 1 sf OR 60+ plants/0 acres of habitat	Likely Very Good	Very Good	Very Good

Table 6e: Key ecological attributes for forested wetlands at Peach Cove

Category	KEA	Indicator	---------- Indicator rating ----------				Current rating	Short term goal	Long term goal
			Poor	Fair	Good	Very good			
Condition	Species composition	Presence and relative abundance of wetland associated plant species	Characteristic wetland associated plant species are absent	Characteristic wetland associated species are present but fall below minimum percent covers for that plant association	Characteristic wetland associated plant species are abundant within the site and fall between the minimum and average percent covers for that plant association	Characteristic wetland associated plant species are very abundant within the site, and measure at or above the average and percent covers for that plant association	Good?	Very Good	Very Good
Condition	Forest structure	Degree to which forest canopy in wetland buffer shows signs of natural recruitment and diverse age classes	Canopy is extremely homogenous, sparse, or absent (<10% cover)	Canopy is somewhat homogenous in density and age and is extremely open (<25%)	Canopy is largely heterogeneous in age or size, but with some gaps containing regeneration or some variation in tree sizes and overall density is moderate (25-50%)	Canopy is a mosaic of small patches of different ages or sizes, including old trees and canopy gaps containing regeneration; overall density moderate and average tree cover is 50-80%	Good?	Very Good	Very Good
Condition	Hydrology	Hydroperiod	Both the filling/inundation and drawdown/drying of the site deviate from natural conditions (either increased or decreased magnitude and/or duration)	Site's inundation patterns are characterized by natural conditions, but are subject to more rapid/extreme drawdown or drying compared to more natural wetlands OR patterns are of substantially lower magnitude or duration than under natural conditions, but thereafter site is subject to natural drawdown or drying	The filling or inundation patterns in the site are of greater magnitude (and greater or lesser duration) than would be expected under natural conditions, but thereafter, the site is subject to natural drawdown or drying	Hydroperiod of the site is characterized by natural patterns of filling or inundation and drying or drawdown	Very Good	Very Good	Very Good

Table 6f: Key ecological attributes for riparian forest (streams or rivers)

Category	KEA	Indicator	---------- Indicator rating ----------				Current status	Short term goal	Long term goal
			Poor	Fair	Good	Very good			
Condition	Vegetative structure: shrub layer	% native shrub cover	<10% cover	10-25% cover	25-50% cover	>50% cover	Poor	Fair	Good
Condition	Vegetative structure: tree layer	% native tree canopy cover	<20% cover	20-30% cover	30-40% cover	40% or more	Poor	Fair	Good
Condition	Native tree and shrub richness	# native tree and shrub species per 0.4 ha (1 ac)	<5 species	5-10 species	10-15 species	>15 species	Good	Very Good	Very Good
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	Poor	Poor	Good

Table 7: Stresses and sources of stress at Peach Cove

Conservation target	Threat (stress)	Severity	Scope	Overall stress rank	Source	Contribution	Irreversibility	Overall source rank	Overall threat rank	Comments
Oak woodland	Increased distance to other woodlands	Low	Medium	Low	Ex-urban development	Very High	Very High	Very High	Low	
Oak woodland	Reduced diversity and abundance of native grasses and forbs	Very High	Very High	Very High	Competition from exotic plants; altered fire regime; inappropriate human use	Very High	Medium	High	High	
Oak woodland	Increased summer temps with decreased water availability	Low	Low	-	Climate change	Low	Very High	High	-	This threat will play out over a longer timeline than this 10-year planning horizon

Conservation target	Threat (stress)	Severity	Scope	Overall stress rank	Source	Contribution	Irreversibility	Overall source rank	Overall threat rank	Comments
Oak woodland	Reduced patch size and increased edge	Low	Medium	Low	Ex-urban development; inappropriate human use; loss of oaks due to encroachment	High	Very High	Very High	Low	
Oak woodland	Altered canopy structure	Low	Low	-	Encroachment by other trees	Very High	Medium	High	-	Oak release completed in 2012
Upland closed forest	Loss of Oregon ash	Low?	Low	-	Emerald ash borer	Very High	Very High	Very High	-	This threat may play out over a longer timeline than this 10-year planning horizon
Upland closed forest	Lack of recruitment, altered habitat structure of native trees and shrubs	Medium	Medium	Medium	Competition from exotic plants	High	Low	Medium	Low	This is "averaged" over the relatively intact Metro holdings and the degraded OPRD land
Upland closed forest	Lack of dead standing and down trees	Low	Low	-	Prior land use	Very High	Medium		-	
White rock larkspur	Reduced habitat area	Low	Low	-	Encroachment; competition; Inappropriate human use	High	Low	Medium	-	Oak release completed in 2012 probably increased habitat area
White rock larkspur	Reduced number of groups of plants	High	High	High	Competition from exotics	Very High	Medium	High	High	
Forested wetlands	Reduced abundance of wetland associated plants	Low?	High	Low	Invasive plants, climate change	Very High	Very High	Very High	Low	Nested target of *Howellia aquatilis* at risk from this stress
Forested wetlands	Lack of recruitment of woody plants in buffer	Low	Low	-	Invasive plants, climate change	High	Low	Medium	-	
Forested wetlands	Altered hydroperiod	Low	Low	-	Climate change	Very High	Very High	Very High	-	This threat will play out over a longer timeline than this 10-year planning horizon

Conservation target	Threat (stress)	Severity	Scope	Overall stress rank	Source	Contribution	Irreversibility	Overall source rank	Overall threat rank	Comments
Riparian forests	Reduced percent cover native shrubs	Low	High	Low	Climate change	Very High	Very High	Very High	Low	The forest is young and shrubs are increasing in cover; climate change is longer term concern
Riparian forest	Reduced percent cover native trees	Low	High	Low	Climate change	Very High	Very High	Very High	Low	Potential long term effects due to climate and microclimate changes
Riparian forest	Reduced native tree and shrub richness	Low	Medium	Low	Invasive species	Very High	Medium	High	Low	Trails, roads and nearby development are seed sources
Riparian forest	Lack of snags and down wood	Low	High	Low	Invasive species, climate change	Very High	Very High	Very High	Low	Some snags and down wood brought into the young forest in 2012; climate change is longer term concern
Fen	Reduced cover of native plants	Medium	Very High	Medium	Altered water quality, invasive plants, climate change	Very High	High	Very High	Medium	Non-natives increase with human impacts; roads, septic systems, fertilizer are short- and long-term concerns
Fen	Reduced thickness and integrity of the surface organic soil horizon	Low	Very High	Low	Altered hydrology (water table) due to roads, ground-water pumping, etc.	Very High	High	Very High	Low	
Fen	Altered water source	Medium?	Very High	Medium	Septic and well systems at rental house and surrounding houses, climate change	Very High	High	Very High	Medium	Excess nutrients from failing septic tanks or garden fertilizers, pumping water for home and garden use are serious threats to the fen
Fen	Reduced width of buffer surrounding fen	Low	Low	-	Development	Low	Low	-	-	The existing buffer, except the rental house, is largely under Metro's control but it is critically important to maintain this filter from external threats

Threats and their sources for the next 10 years

This SCP is intended to focus attention on strategies and actions that are most urgent and needed in the next ten years. Drawing from the tables in the previous section and the climate change considerations that follow, several themes emerge:

1. Invasive species, particularly exotic plants, are an important threat to the oak woodland habitats at Peach Cove and to the pale rock larkspur that occurs there. There are other threats, but invasive plants are the most pressing threat in the time frame of this site conservation plan.
2. Human influences such as the legacy of altered fire regimes and present-day inappropriate human use are also important threats to the oak woodlands for the next 10 years (and beyond).
3. Although many climate change effects are expected to be most prominent in future decades, work that improves and maintains the health of all habitats at Peach Cove will position them for better resilience in the future.

Climate change considerations

Climate change is anticipated to affect summer temperatures and availability of water in summer to oak woodlands. Other indirect effects of climate change may include range shifts of plants, some native to North America and some not, and increased competition by these plants. It is possible that climate change may touch every key ecological attribute, though effects on some may be more important than others.

Direct effects that may occur

- Increased summer temperatures
- Increased severity of winter rain events
- Altered patterns of groundwater recharge and provision of rainwater to the fen
- Decreased water availability in summer

Indirect effects that may occur

- Increased risk of wildfire in hotter, dryer summers
- Range shifts by undesirable plants increasing competition
- Disease introductions and/or increased vulnerability to disease
- Loss of synchronicity of plant reproduction and pollinators
- Loss of synchronicity of resident and migratory animals and food sources (e.g., insect hatches)

In oak woodlands, the availability of summer water may be important for oaks' growth. Research has documented that oaks stop growing for the year when water availability drops. The presence and abundance of native herbaceous plants may be profoundly affected by range expansions and introductions of highly competitive species. The latter includes the *Delphinium* target.

In upland forest, plant growth and survival may be affected by increased summer temperatures and reduced water availability in summer.

As discussed in the target area assessment for Willamette Narrows, the oak woodlands and mixed oak-prairie habitat in this area may provide important macro-refugia and corridors for associated plants and animals as they shift their ranges in response to climate change. The long-term

conservation of the Narrows, with the addition of nearby "stepping stones" to connect these habitats across the landscape, will help conserve these biota through coming decades.

The fen relies on groundwater to nourish the "rich fen" components of the floating mat (e.g., rare *Dulichium, Menyanthes* and *Drosera*) and on precipitation to support the "poor fen" components (e.g., *Sphagnum* hummocks). Alterations in quantity and timing of groundwater recharge and precipitation events may have profound effects on the fen that we cannot predict today.

Table 8: Threats and actions for key ecological attributes of important targets affected by climate change

Target	KEA	Threat	Action	Notes
Oak woodland	Vegetation structure	Increased summer temps with decreased water availability	Reduce other threats to reduce cumulative effect	Oak release work completed in 2012 was probably the best action
Oak woodland	Native grass and forb presence and abundance	Multiple indirect threats, including competition from new introductions, loss of synchronicity with key biota	Reduce other threats in the short term, such as reducing cover of exotic grasses	This short-term work should help in the long-term as climate change plays out
Delphinium	Extent of suitable habitat and number of patches within habitat	Multiple indirect threats, including competition from new introductions, loss of synchronicity with key biota	Reduce other threats in the short term, such as reducing cover of exotic grasses	This short-term work should help in the long-term as climate change plays out
Fen	All KEAs related to condition	Altered patterns of groundwater recharge and precipitation	Reduce other threats, i.e., septic systems, well pumping, fertilizer use; retain/improve buffer	Reducing other threats should improve the fen's resiliency as climate change proceeds

Strategies

The next sections describe strategies designed to address the most urgent threats identified in this site conservation plan. They are grounded in the previous analyses of desired future condition for each habitat and the level of improvement that is achievable in the next 10 years.

High-priority strategies

- Treat exotics, especially grasses and *Cytisus scoparius* (Scot's broom), and seed and plant native forbs and grasses. This strategy addresses stresses on multiple conservation targets (oak woodland, white rock larkspur) and can begin immediately.
- Remove rental house when current renter moves. Several important steps will protect the fen:
  - Demolish house and replant the area to increase the buffer to the east
  - Pump and abandon the septic system to eliminate nutrient "leaks" into the fen
  - Abandon any/all wells that pump groundwater
- Acquire or seek other conservation for oak woodlands in the surrounding landscape. This will address the proximity key ecological attribute, under threat from ex-urban development. There is an opportunity to partner with the Clackamas SWCD and others for conservation where landowners do not want to sell property to Metro, or parcels were not identified in the bond measure refinement plan.

Medium-priority strategies

- Treat upland forest plants as they encroach on the open habitats occupied by white rock larkspur to prevent loss of habitat for the latter.
- Treat invasive plants in the upland forest habitat to prevent habitat degradation.

Lower-priority strategies

- Remove encroaching trees that threaten the oak woodland – this work was recently completed and will need to be repeated, but not in the life of this site conservation plan (10 years). It will be a high priority in 20 to 30 years.
- Develop a strategy for oak woodland conservation in the face of a changing climate. We anticipate knowledge and collaboration to continue and hope to be in a position to address this issue.
- Develop a response to the emerald ash borer: similar to the climate change issue, knowledge and understanding of this threat as it relates locally to our Oregon ash trees is in its infancy. Metro will track progress of applied research and management approaches to address this issue.

The following table provides additional details on all strategies.

Table 9: List of proposed strategies

Strategy	Sources of stress it addresses	Focal conservation targets/KEAs affected	Why it is important/ any timing issues	Measure(s) of success	Rank
Treat exotics, especially grasses and Scot's broom, and seed and plant native forbs	Competition from exotic plants	Oak woodland and *Delphinium*: diversity and cover of native understory	Without intervention the low cover and diversity will diminish further; weed issues will increase from recent oak release	Improvement in KEA rankings	High
Treat exotics, especially grasses	Competition from exotics; encroachment	*Delphinium*: extent of suitable habitat, number of patches of plants	Ongoing pressure from grasses could put it at risk	Establish and maintain KEA of Very Good	High
Develop a plan for the rental house and associated infrastructure	Altered water source, habitat fragmentation	Fen: water quality, buffer size	The fen is extremely sensitive to nutrient inputs	House removed and area revegetated, septic and well systems closed properly	High?
Develop methods and schedule to assess baseline condition of fen and monitor condition of soil, habitat	Altered water quality, invasive plants, altered hydrology	Fen: native plant cover, water quality, hydrology, soil condition	This is the only fen in the Willamette Valley and we have not assessed it; this is woefully overdue	Baseline conditions established, ongoing assessment methods and schedule in place	High or Medium
Acquire or seek other protection for oak woodlands within 2 km of Camas Cliffs	Ex-urban development that would fragment or otherwise degrade oak woodlands	Oak woodland: land-scape context, distance to other oak patches; size, acreage of wood-lands; edge condition	Willamette Narrows' oak woodlands are important remnants and linkages across the ecoregion	Improvements to shift KEA ratings from Fair to Good	High or Medium?
Treat exotics, especially *Rubus bifrons*; *Hedera* in upland forest	Competition from exotic plants	Upland forest: recruitment and habitat structure of trees and shrubs	Periodic treatments of certain exotics are essential to avoid losing native plants	Establish and maintain KEA rating of Good	Medium
Treat upland forest woody plants as they spread into openings	Encroachment, competition	*Delphinium*: extent of suitable habitat	Delphinium requires open, sunny areas and will fail if shaded	Establish and maintain KEA of Very Good	Medium

Strategy	Sources of stress it addresses	Focal conservation targets/KEAs affected	Why it is important/ any timing issues	Measure(s) of success	Rank
Develop strategy for oak health as ecological and climate change research mature	Climate change	Oak woodland: vegetation structure	Growth and development of trees on thin soils may be further compromised	Retain KEA rating at Very Good	Low
Remove encroaching firs, maples and other trees to release oak canopy	Encroachment by other trees	Oak woodland: vegetation structure	Critical to avoid oak mortality and eventual replacement with upland forest	Retain KEA rating at Very Good	Low; release done in 2012
Develop response as knowledge develops	Emerald ash borer	Upland and riparian forest: loss of Oregon ash	Could threaten ash across the region; however, pest is not here yet	Retain this species in the forest	Low
Treat exotics, e.g., birch (*Betula*) on fen's floating mat	Invasive species	Native plant cover	Metro has yet to treat any exotics on the floating mat; it is overdue	KEA rating of Good within 5 years	n/a (staff time, herbicides in hand)

Strategy ranking:
High: must do within 5 years to protect target viability
Medium: target will persist without it but will degrade over 5-10 years or require additional future management
Low: addresses a non-critical threat or one that is unlikely to threaten target viability within 10 years

Specific actions and funding requirements

Table 10: Specific actions to implement strategies

Strategy	Target	Priority (how soon)	Specific tasks	Estimated cost
Develop methods and schedule to assess baseline conditions and monitor condition of soil, habitat	Fen	High – ASAP	Research soil and water assessment methods; develop methods for soil, water and plant assessments, implement baseline assessment	$5,000 initially; $2,500 every few years for sampling and lab testing
Develop a plan for the rental house and associated infrastructure	Fen	Medium	Internal meeting of natural areas and property services teams to explore options and develop process	n/a? (staff time; cost of house removal tbd)
Treat exotics, e.g., birch (*Betula*)	Fen	Medium	In-house team work day(s), walk fen and cut and stump-treat woody plants	n/a (staff time, herbicides in hand)
Acquire or seek other protection or conservation for oak woodlands within 2 km of Camas Cliffs	Oak woodland	High – ASAP	Seek partners (e.g., SWCD, land trust) to work with landowners to care for their oak woodlands and/or purchase key sites where sellers are not interested in Metro's bond measure; map oak in the vicinity of the site; release oaks throughout Metro and OPRD ownership	Uncertain – probably not Metro funds though we may be able to assist with grant writing and/or provide match from our work
Treat exotics, especially grasses and Scot's broom, and seed and plant native forbs	Oak woodland	High – ASAP	Annual treatment of Scot's broom throughout oak units; collect and seedbank all oak/prairie species present that are not commercially available; develop grow out priority list	$7,000 per year for Scot's broom and other exotics
Develop strategy for oak health as ecological and climate change research mature	Oak woodland	Low – 10 years out or more	Monitor progress in literature and other means to detect when sufficient information is available to develop strategy	Nominal; part of routine work
Remove encroaching firs, maples and other trees to release oak canopy	Oak woodland	Medium – 5 to 10 years out	Cut and stump-treat encroaching upland forest tree species	$10,000 every 5 years? (about 3 crew days)

Strategy	Target	Priority (how soon)	Specific tasks	Estimated cost
Develop response as knowledge develops	Upland forest	Low – 10 years out or more	Monitor spread of ash borer and work with USDA and/or ODA on treatment options	Nominal; part of routine work
Treat exotics, especially *Rubus bifrons*; Hedera	Upland forest	High – ASAP	Sweep upland forest habitat to treat exotics; start on OPRD ASAP	$15,000 every 5 years? (about 5 crew days)
Treat upland forest woody plants as they spread into openings	*Delphinium*	Medium – 5 to 10 years out	Cut and stump-treat encroaching upland forest tree species	$2,500 every 5 years? (about 1 crew day plus chemical)
Treat exotics, especially grasses	*Delphinium*	High – ASAP	Establish plots for experimental treatment of grasses, implement trials	Staff time, chemical cost, other supplies

Monitoring plan

Monitoring for key ecological attributes associated with the three conservation targets is shown in Table 11. In addition, wildlife monitoring occurs at Peach Cove Fen to document the breeding bird community's response to oak release work completed in 2012 and ongoing availability of habitat for pond-breeding amphibians.

Table 11: Monitoring strategy

Target KEA(s)	Indicator	Method	Threshold for action?	Frequency and cost
Fen, relative cover native plant species	Relative percent cover	Visual inspection every 3-5 yrs	KEA rating below Good	Initially in 2014 or 2015; then every 3-5 yrs; nominal cost (staff time)
Fen, organic matter accumulation	Thickness and integrity of the surface organic soil horizons	Quantitative sampling, method tbd	KEA rating below Very Good	Initially in 2014 or 2015; perhaps $1,000 initially for supplies, then nominal cost
Fen, hydrology	Water source	TBD	KEA rating below Good	Unknown; not expected to be more than $1,000? (consultant time to develop method?)
Fen, physico-chemical	Water quality	Quantitative sampling, method tbd	KEA rating below Very Good	Initially in 2014 or 2015; perhaps $4,000 initially, then $2,500 every few years
Fen, edge condition	Buffer width	GIS	KEA rating below Good	When conditions change; $0
Oak woodland, habitat area, edge condition, proximity to other units	Number of 20-acre units; number of 40-acre units nearby; neighboring land use	Perusal in GIS	n/a	One time initially, then after any new acquisitions or changing land use
Oak woodland, native species richness, frequency, percent cover	Species richness and frequency, relative cover	10 permanent transects with quadrats; walk-throughs	KEA rating below Good	Annual monitoring by staff for several years to document response to 2012 oak release; 3 field days; routine site visits
Oak woodland, vegetation structure	Canopy cover and architecture of native woody vegetation	Site visits and walk-throughs	KEA rating below Very Good	Nominal cost, staff visits every few years
Upland forest, patch size and edge condition	Patch more than 30 acres; change in neighboring land use	Perusal in GIS	n/a	One time initially, then after any new acquisitions or changing land use
Upland forest, native tree and shrub richness and structure	Native species per acre and percent cover	Site visits and walk-throughs	KEA rating below Good	Staff time for a close look every 5 years in concert with weed work

Target KEA(s)	Indicator	Method	Threshold for action?	Frequency and cost
Upland forest, mature trees, snags and down wood	Number and size of large trees, number of snags/down wood per acre	Site visits and walk-throughs	KEA rating below Good	Staff time for a close look every 5 years in concert with weed work
Delphinium, extent of suitable habitat and number of patches of plants	Acres of habitat, number of patches or plants per unit area	Visual inspection and estimation	KEA rating below Very Good	Once per 2-3 years

Current partners, partner projects and potential partners

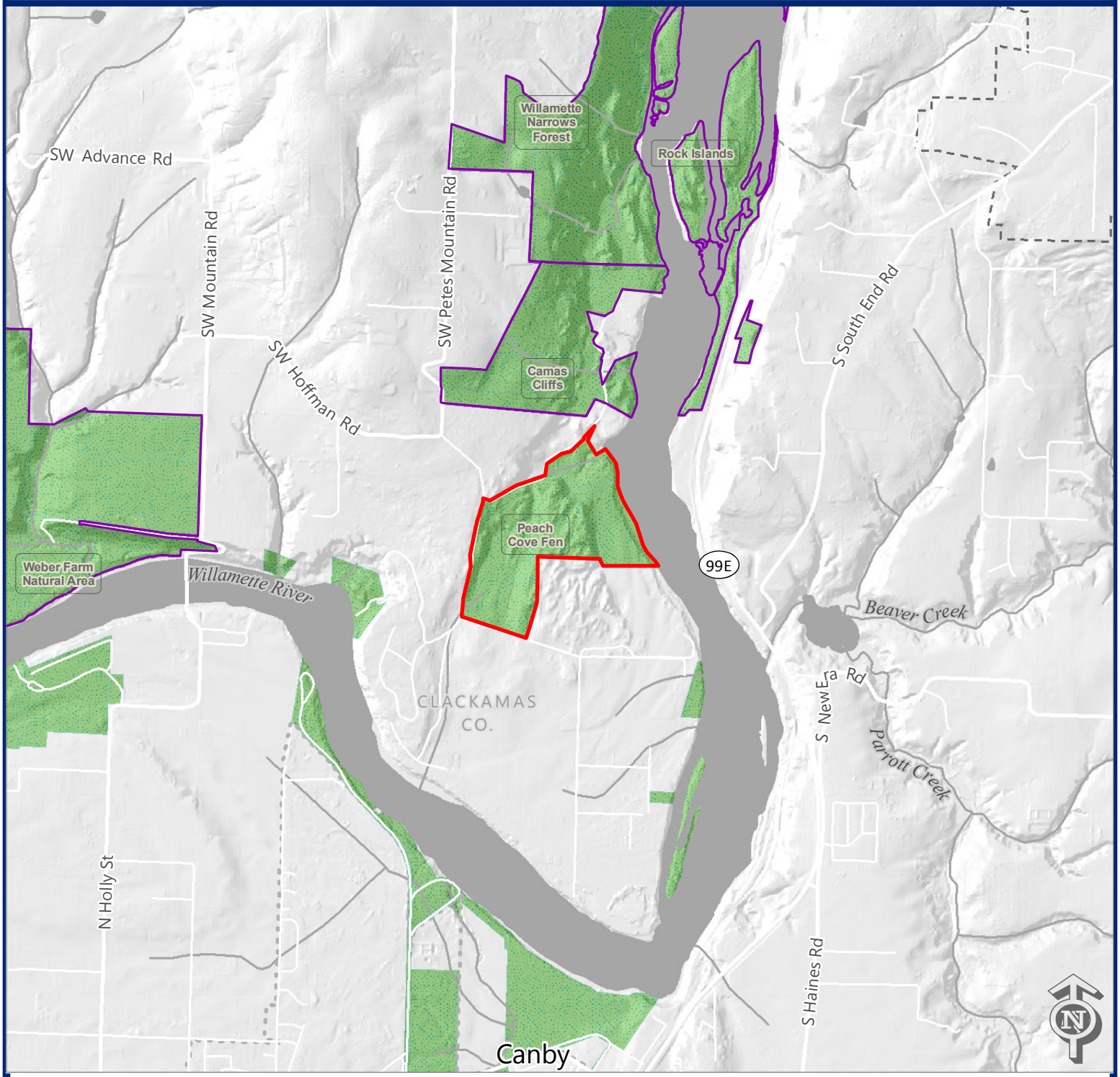
Current partners

- Cascadia Prairie-Oak Partnership, especially Center for Natural Lands Management and American Bird Conservancy, for oak and prairie restoration
- Phil Gaddis (retired): developing a comprehensive plant list for the Willamette Narrows, including phenology notes
- Oregon Department of Forestry (Chris Paul, Cindy Kolomechuk): Clackamas Community Wildfire Protection Plan projects
- Intertwine Oak Working Group for regional oak mapping

Potential partners

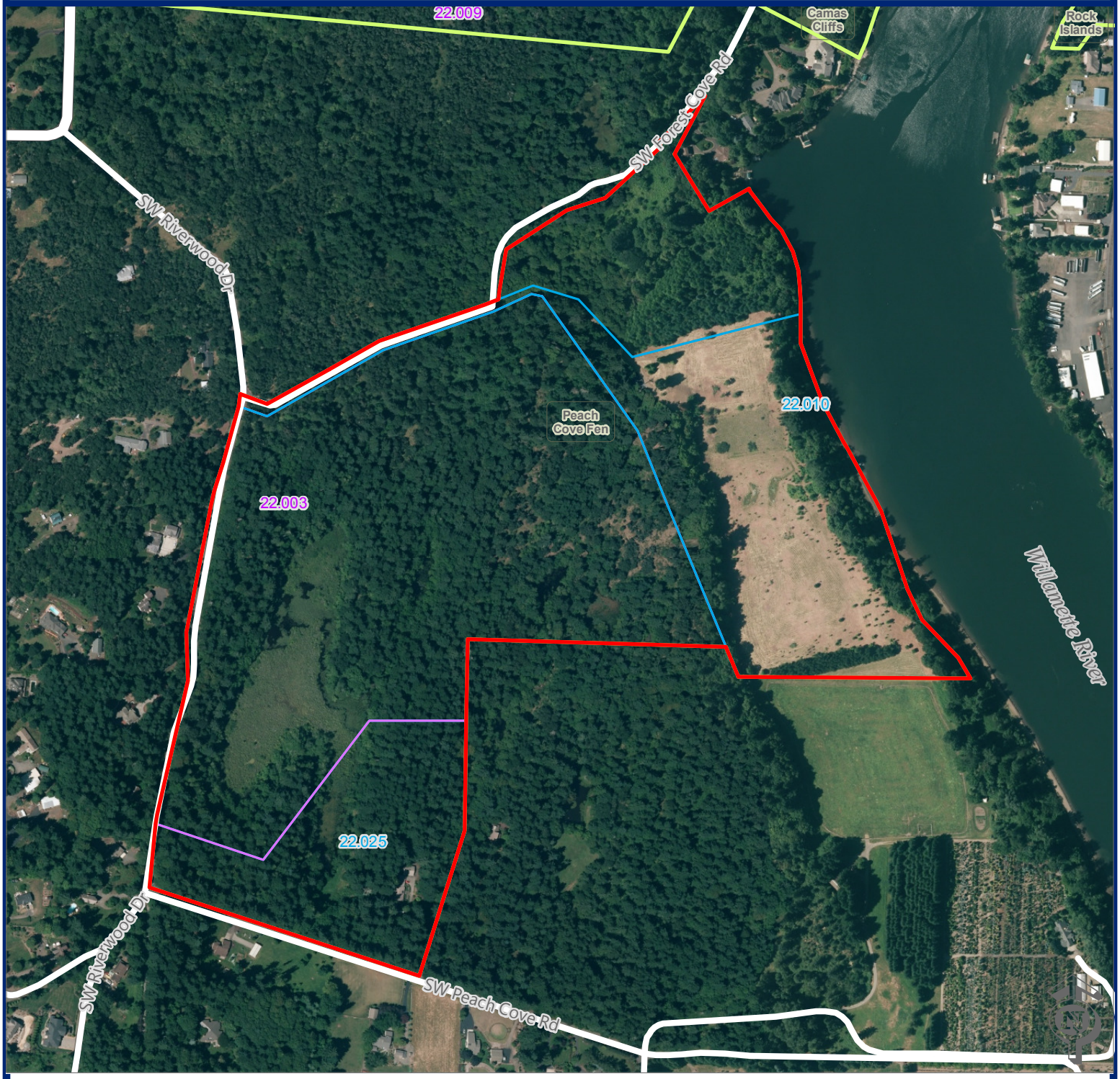
- Clackamas SWCD: could work with neighboring landowners on oak habitat conservation to maintain and improve habitat condition and connectivity
- Columbia Land Trust, other land trust: could work with key neighbors that are not interested in selling to Metro

Vicinity Map



map date: 4/10/2014

Site Map



Peach Cove Fen site

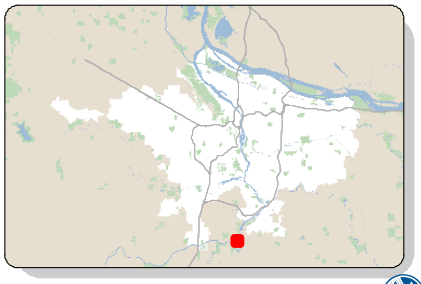
Other Metro sites

Bond Measure

1995 Bond Measure

2006 Bond Measure

0 700 1,400 Feet

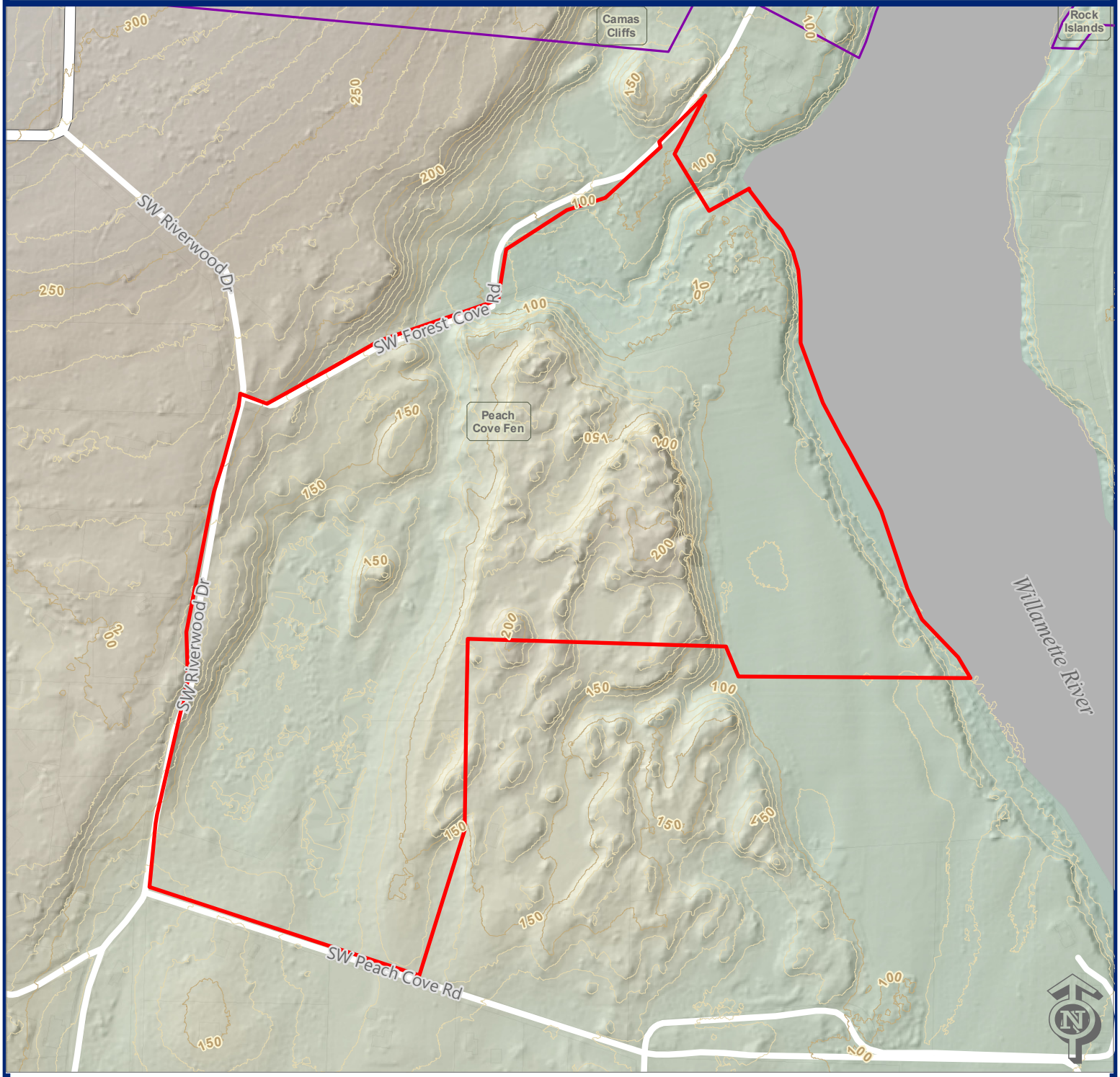


Metro

Peach Cove Fen Site Conservation Plan

map date: 4/10/2014

Topography

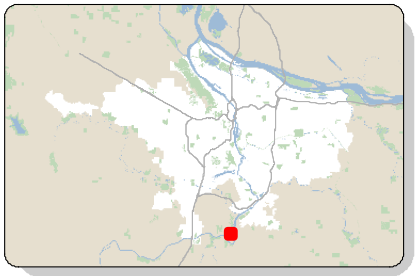


Peach Cove Fen site

Other Metro sites

10 ft contour

50 ft contour



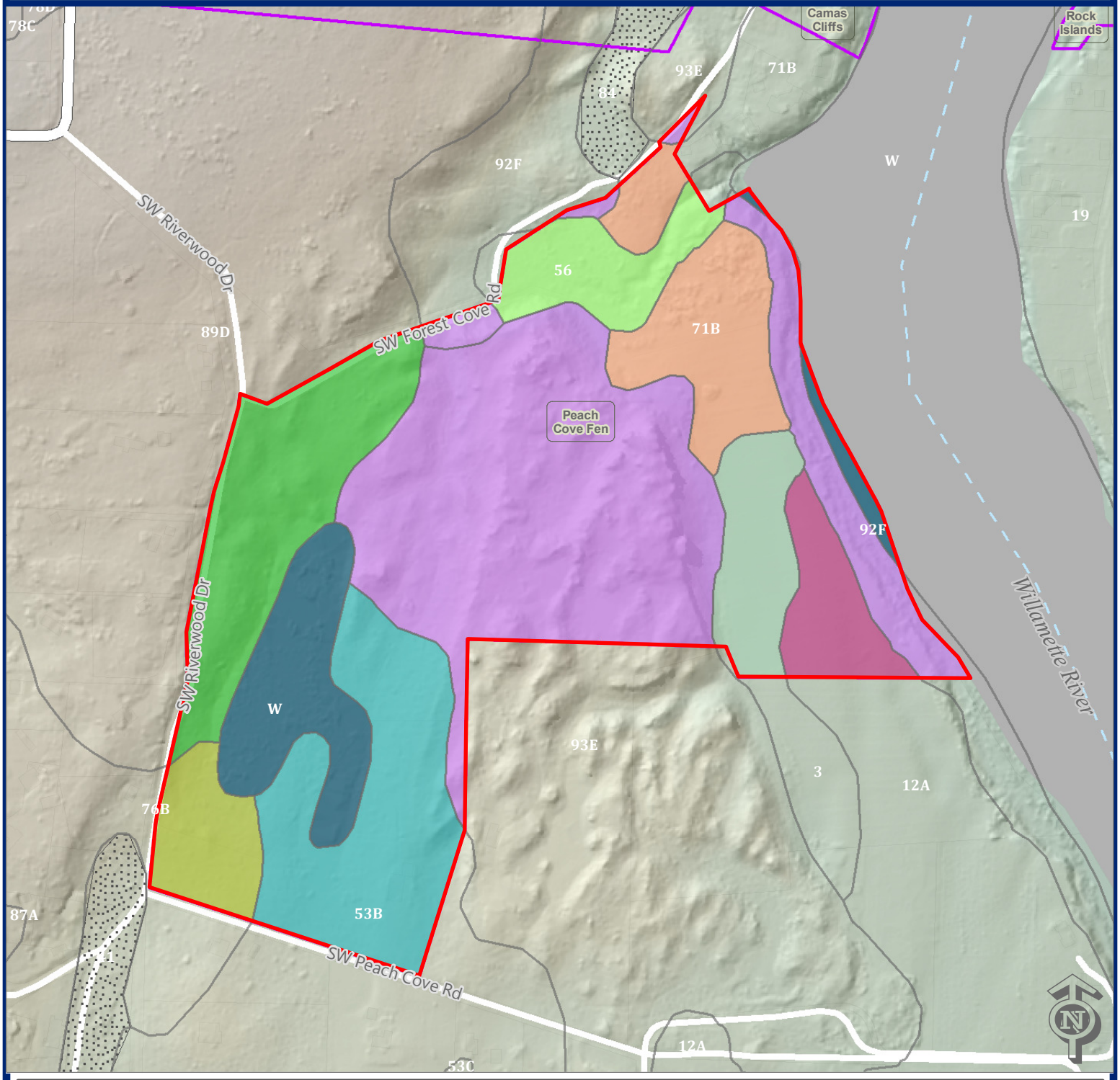
0 710 1,420 Feet

Metro

Peach Cove Fen Site Conservation Plan

map date: 4/10/2014

Soils



Peach Cove Fen site

Other Metro sites

Site soils

- Amity silt loam
- Canderly sandy loam
- Latourell loam
- McBee silty clay loam
- Quatama loam
- Salem silt loam
- Water
- Witzel very stony silt loam
- Xerochrepts and Haploxerolls

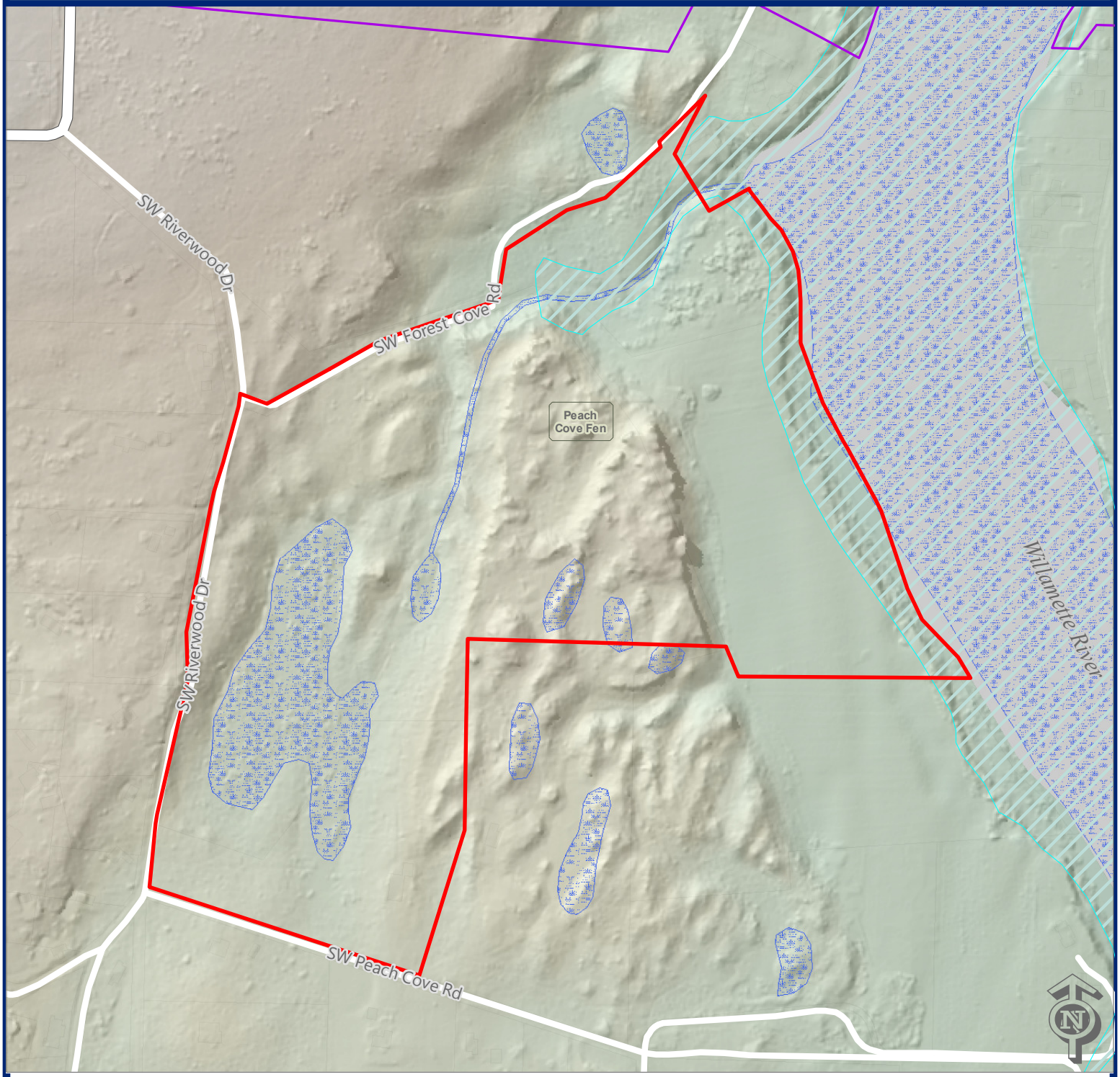
0 630 1,260 Feet

Metro

Peach Cove Fen Site Conservation Plan

map date: 4/10/2014

Hydrology

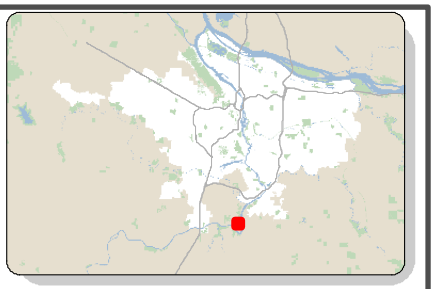


Peach Cove Fen site

Other Metro sites

100 year floodplain

Wetlands



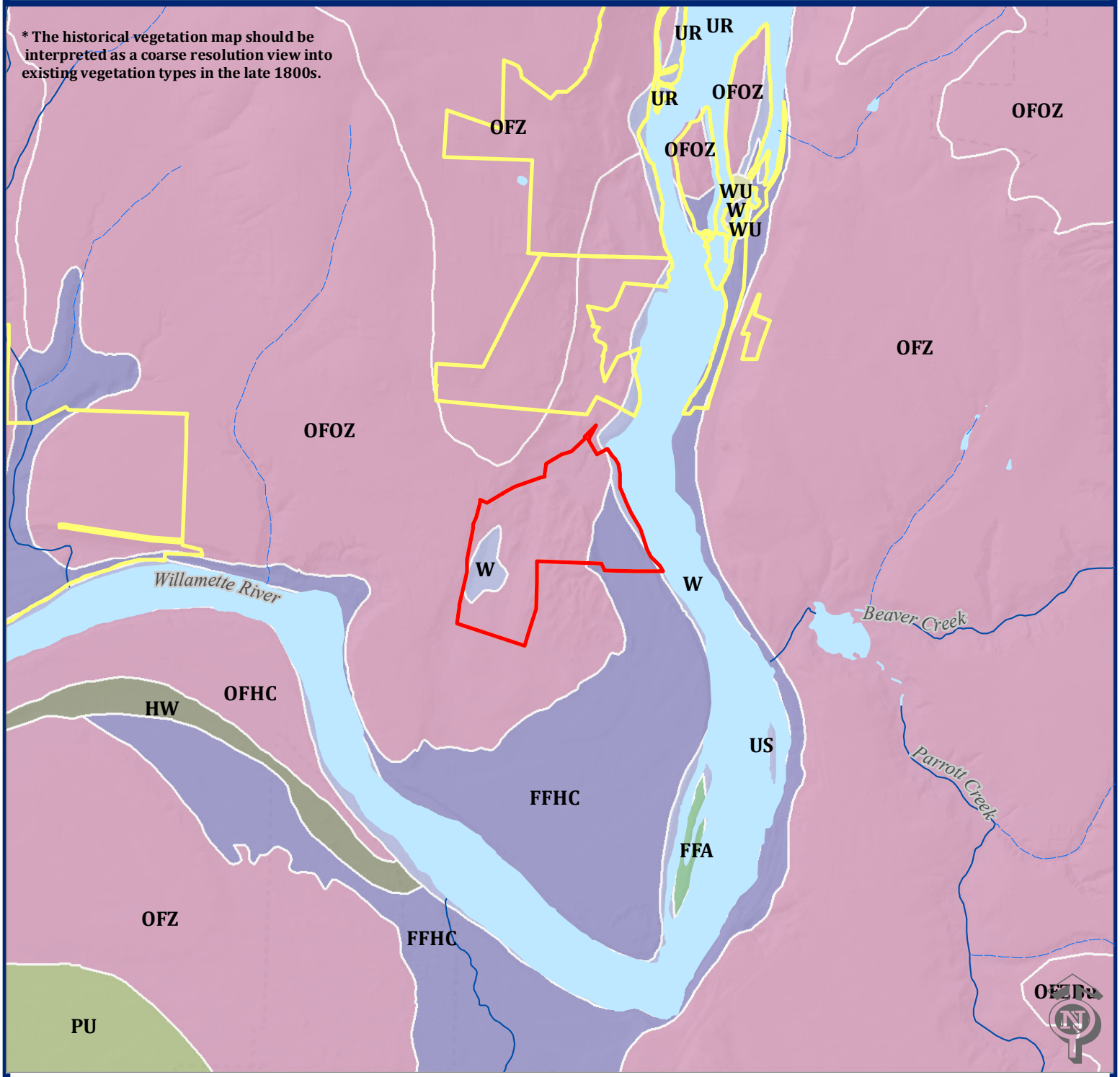
0 690 1,380 Feet

Metro

Peach Cove Fen Site Conservation Plan

map date: 4/10/2014

Historical Vegetation (1851-1910)



Peach Cove Fen site

Other Metro sites

Historical vegetation

- Closed forest; Riparian & Wetland
- Closed forest; Upland
- Emergent wetlands
- Prairie
- Shrubland
- Unvegetated
- Water
- Woodland

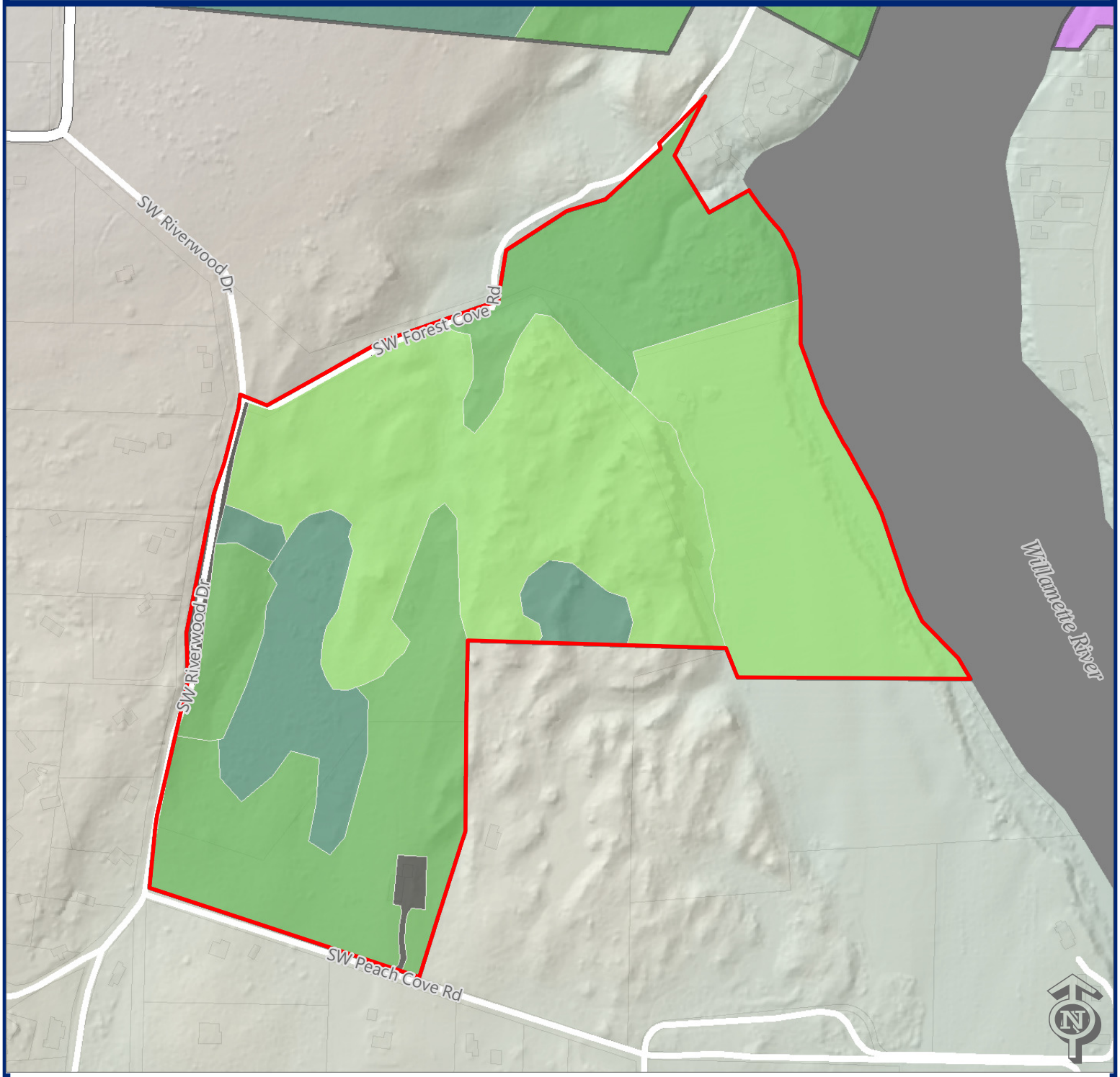
*** Labels refer to vegetation subclasses. Detailed descriptions can be found in T:\OBMO\GIS\DATA_V\vegetation\Historical**

0 2,000 4,000 Feet

Metro

map date: 4/10/2014

Management Status



Peach Cove Fen site

Other Metro sites

Management status

- Yet to be classified
- 2 - Establishment
- 3 - Consolidation
- 4 - Refinement and long-term maintenance
- 9 - No targets (developed)

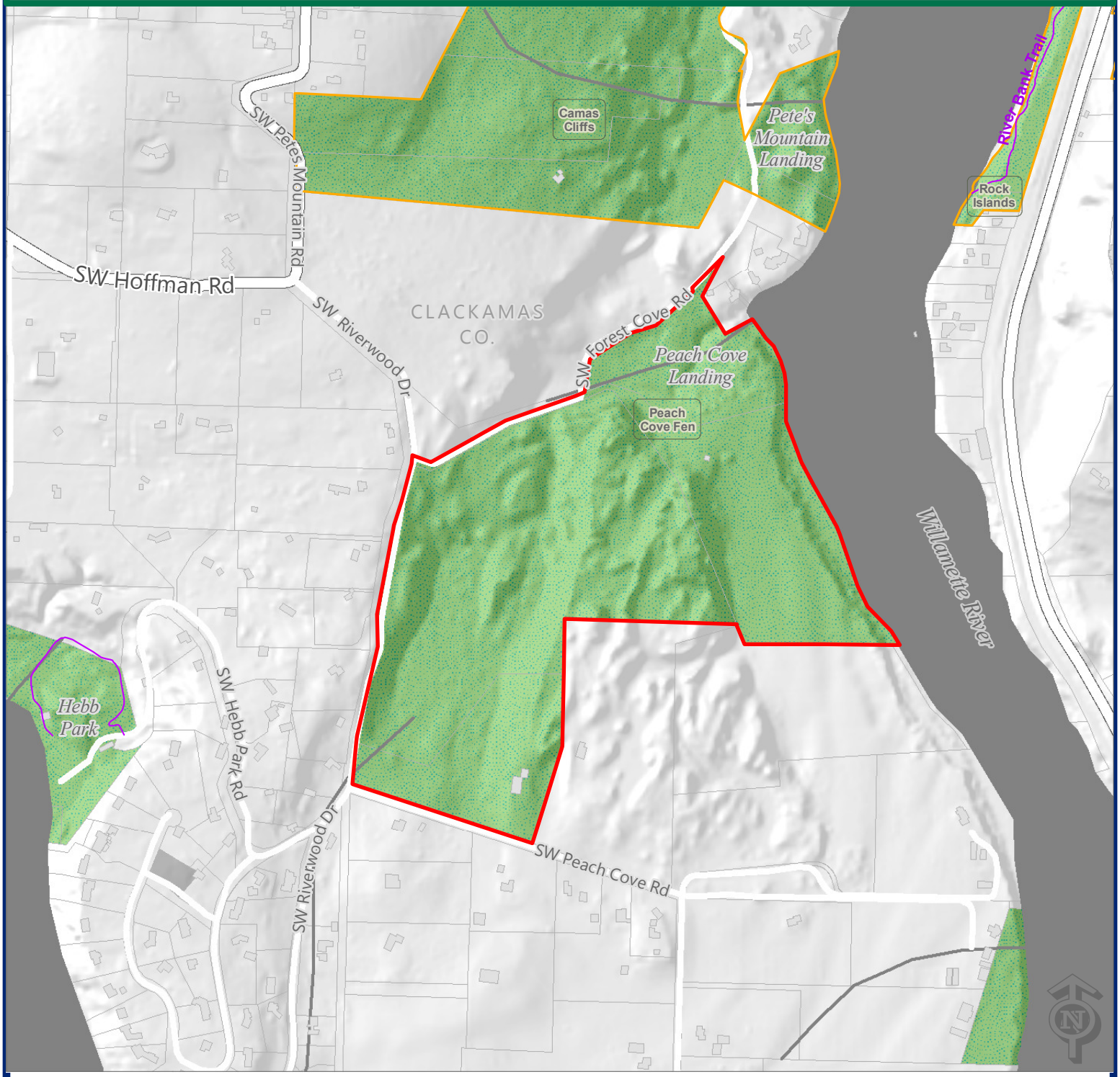
0 620 1,240 Feet

Metro

Peach Cove Fen Site Conservation Plan

map date: 4/10/2014

Visitor Access Assesment Map

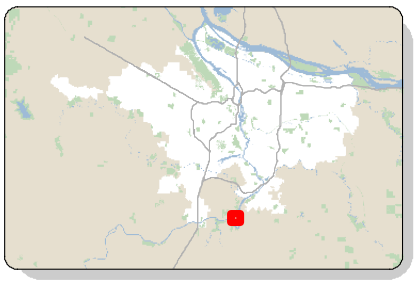


Peach Cove Fen site

Other Metro sites

Park and/or natural area

Existing Local Trails



0 0.2 0.4 Miles

Metro

Peach Cove Fen Site Conservation Plan

created by planning team with illustrator
map date: 4/10/2014

Peach Cove Fen

Approvals for Site Conservation Plan

Date routed: May 8, 2014

Please return to Lori Hennings

Jonathan Soll

Signature Jonathan Soll Date 5/8/14

Dan Moeller

Signature _____ Date 5/12/14

Mark Davison

Signature _____ Date 5/16/14

Kathleen Brennan-Hunter

Signature _____ Date 5/19/14