

# Washington State Department of Transportation North Fork Newaukum Mitigation Bank

## Southwest Region

### 2015 MONITORING REPORT

#### Wetlands Program

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**Washington State  
Department of Transportation**

Environmental Services Office

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# Washington State Department of Transportation North Fork Newaukum Mitigation Bank



<b>General Site Information</b>	
<b>Mitigation Location</b>	Surrounding the confluence of the North and Middle Forks of the Newaukum River, Lewis County
<b>LLID Number</b>	1228381466060
<b>Monitoring Period</b>	2003-2033
<b>Year of Monitoring</b>	12 of 30
<b>Credits Released</b>	71.1425
<b>Credits Used</b>	25.059
<b>Credits Available</b>	46.0835
<b>Total Potential Credits</b>	78.39 over 10 years

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## Summary of Monitoring Results and Management Activities (2015)

Performance Standards	2015 Results <sup>1</sup>	Management Activities
5E. 250 living native trees per acre in the North Unit. 4 planted tree species will each achieve at least 10 percent survival (Year- 10)	541 plants/acre (CI <sub>80%</sub> = 499-583) 5 species with > 10% survival	

### Report Introduction

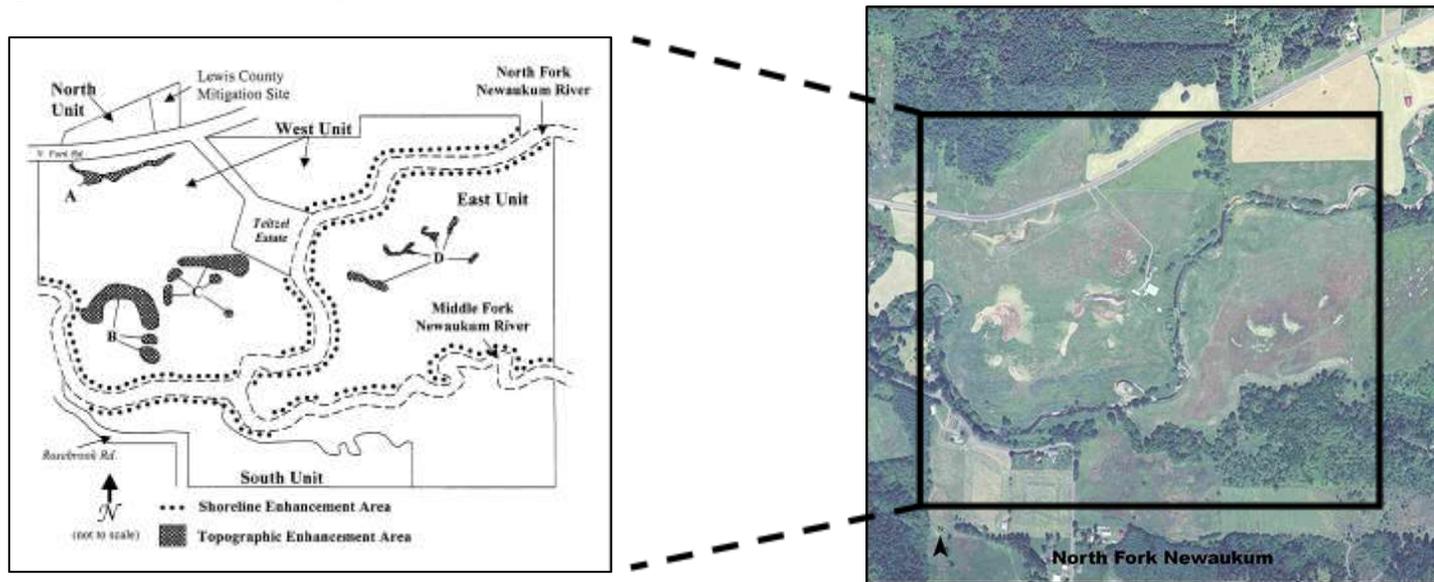
This report summarizes Year-12 monitoring activities at the North Fork Newaukum Mitigation Bank. Included are a site description, the performance standards, an explanation of monitoring methods, and an evaluation of site development. Monitoring activities included vegetation surveys, and photo-documentation. Vegetation monitoring occurred on July 13 and 14, and October 4, 2015.

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<sup>1</sup> Estimated values are presented with their corresponding statistical confidence interval. For example, 541plants/acre (CI<sub>80%</sub> = 499-583) means we are 80% confident that the true density is between 499 plants/acre and 583 plants/acre.

## What is the North Fork Newaukum Mitigation Bank Site?

The North Fork Newaukum Mitigation Bank (NFN Bank) (Figure 1) provides advance mitigation for unavoidable impacts to wetlands from proposed highway projects within Water Resource Inventory Area (WRIA) 23. The site is part of a degraded historic floodplain surrounding the confluence of the Middle and North Forks of the Newaukum River. It consists of former agricultural fields dominated by forbs, grasses, many young establishing tree saplings, and a mature forest in the non-credit generating preserve area. The goals of the NFN Bank focus on re-establishing important wetland and riparian functions. These goals include restoration of historic hydrologic regimes and connectivity between wetland areas, augmenting wetland and riparian function through reforestation, and installing large woody debris to enhance wildlife habitat. Some wetlands in the West Unit were expanded by removing fill to extend hydrologic regimes and expand wetland area. Other wetlands had hydroperiods extended through excavation (Topographic Enhancement Areas A, B, and C). Wetlands in the East Unit were enhanced by creating depressions with explosives (Topographic Enhancement Area D), and disabling the drain tile systems to extend periods of inundation and provide habitat diversity. Shoreline enhancement areas were planted with native shrubs to stabilize eroding banks and provide increased shading.



**Figure 1 Site Sketch**

The NFN Bank contains four large planting units with topographic and shoreline enhancement areas.

## What are the performance standards for this site?

### Year 10

#### Performance Standard 5E

At Years 10 there will be a minimum density of 250 living native trees per acre in areas identified on the Planting Plan as Oregon Ash Forest, Mixed Hardwood Forest, and Mixed Conifer Forest in the North Unit. At least four planted tree species will each achieve at least 10 percent survival threshold values in said area.

Appendix 1 shows the as-built planting plan (WSDOT 2005).

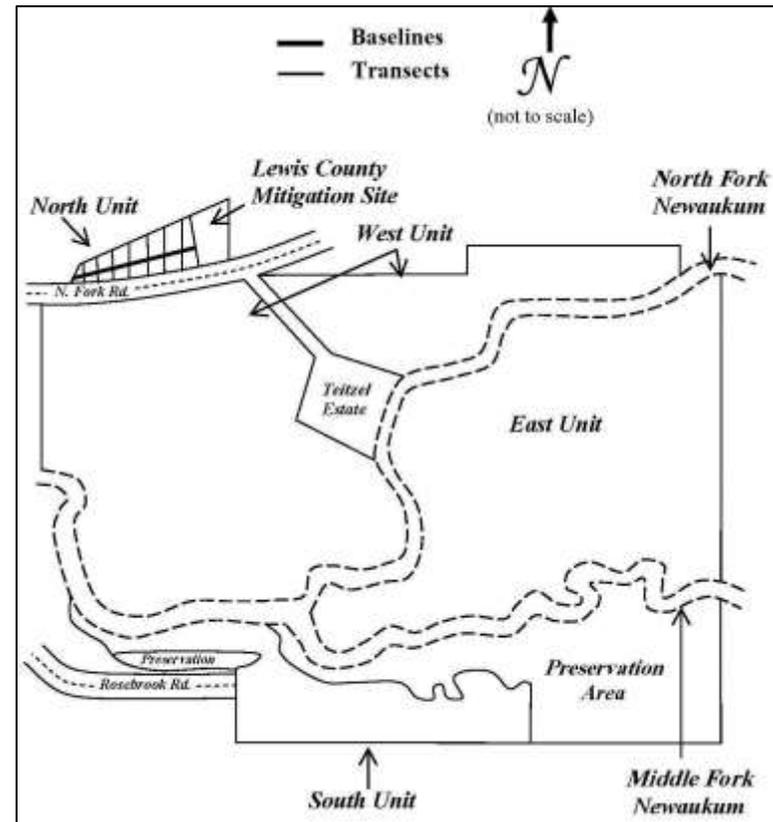
### How were the performance standards evaluated?

Unequal-area belt transects were used to estimate the density of living trees per acre in the North Unit (Performance Standard 5E). A 250 meter baseline was placed perpendicular to the primary environmental gradient in the unit (Figure 2). Thirteen two-meter wide unequal-area belt transects were then randomly placed along the baseline. Living stems were counted in each belt transect. Table 1 includes additional sample design information.

**Table 1. 2015 Sample Design Information**

Unit	Spacing Between Belt Transects	Randomization Type
North	19 meter intervals between transects	Systematic

For additional details on the methods, see the [WSDOT Wetland Mitigation Site Monitoring Methods Paper](#) (WSDOT 2008).



**Figure 2 Site Sampling Design (2015)**

## How is the site developing?

The North unit has greatly exceeded the final year Year-10 performance standard for native tree woody density with nearly double the required density. If shrubs are included in the native woody stem count the density increases to an estimated 821 plants/acre ( $CI_{80\%} = 710-933$ ). A total of fourteen separate native woody species are present within the unit. The North unit has a diverse assemblage of tree and shrub heights ranging from 1 meter up to approximately 8 meters, as the unit ages it will develop into a diverse forested stand.

Results for Performance Standard 5E

(250 living native trees per acre in the North unit 4 planted tree species will each achieve at least 10 percent survival):

The density of native trees per acre in the North unit is 485 plants/acre (CI<sub>80%</sub> = 447-523) (Photo 1). The following species each achieved at least 10 percent survival: Douglas-fir (*Pseudotsuga menziesii*), Oregon ash (*Fraxinus latifolia*), bigleaf maple (*Acer macrophyllum*), grand fir (*Abies grandis*), and western hemlock (*Tsuga heterophylla*).



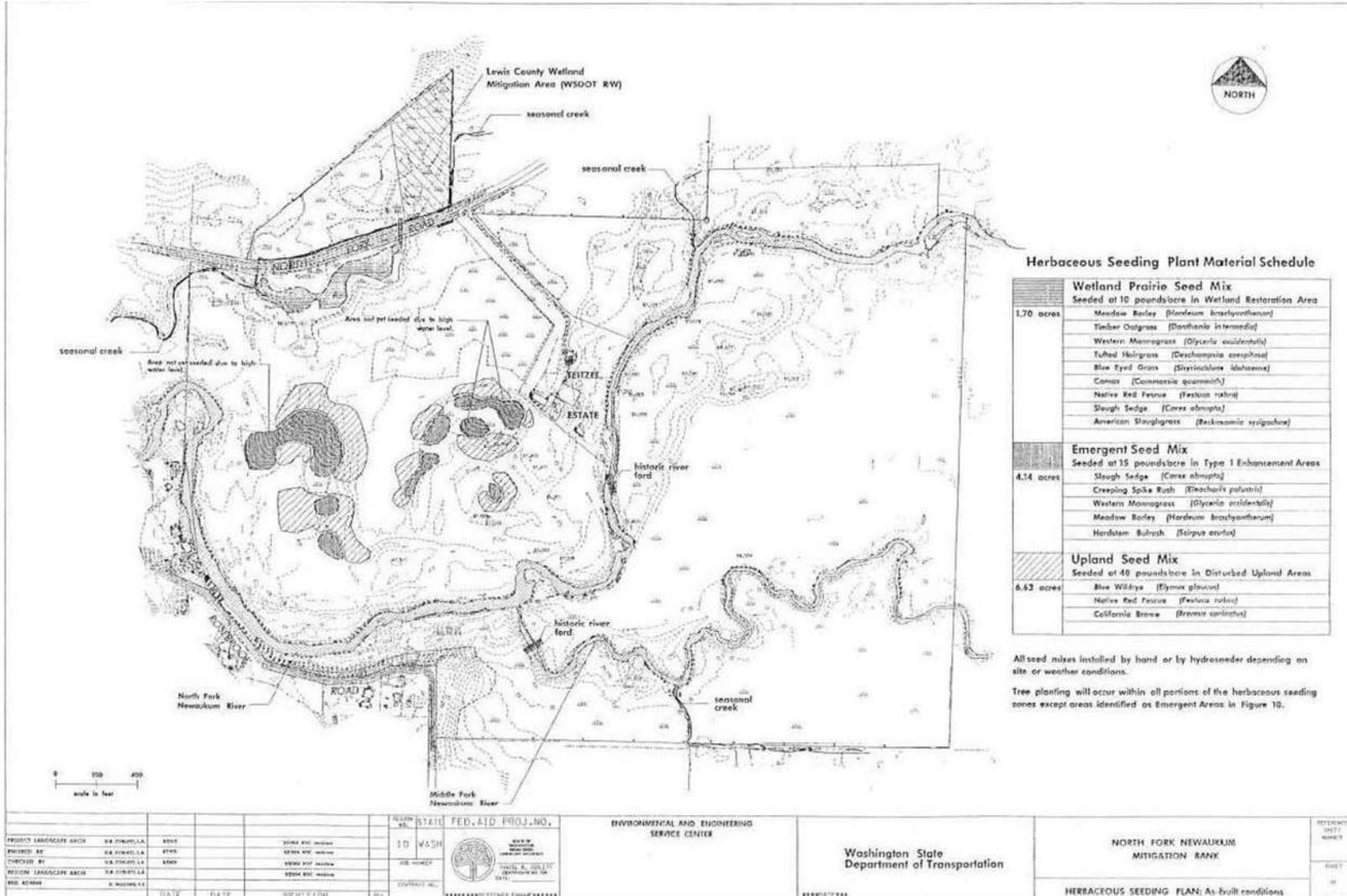
**Photo 1**  
**Woody density in the North Unit (July 2015)**

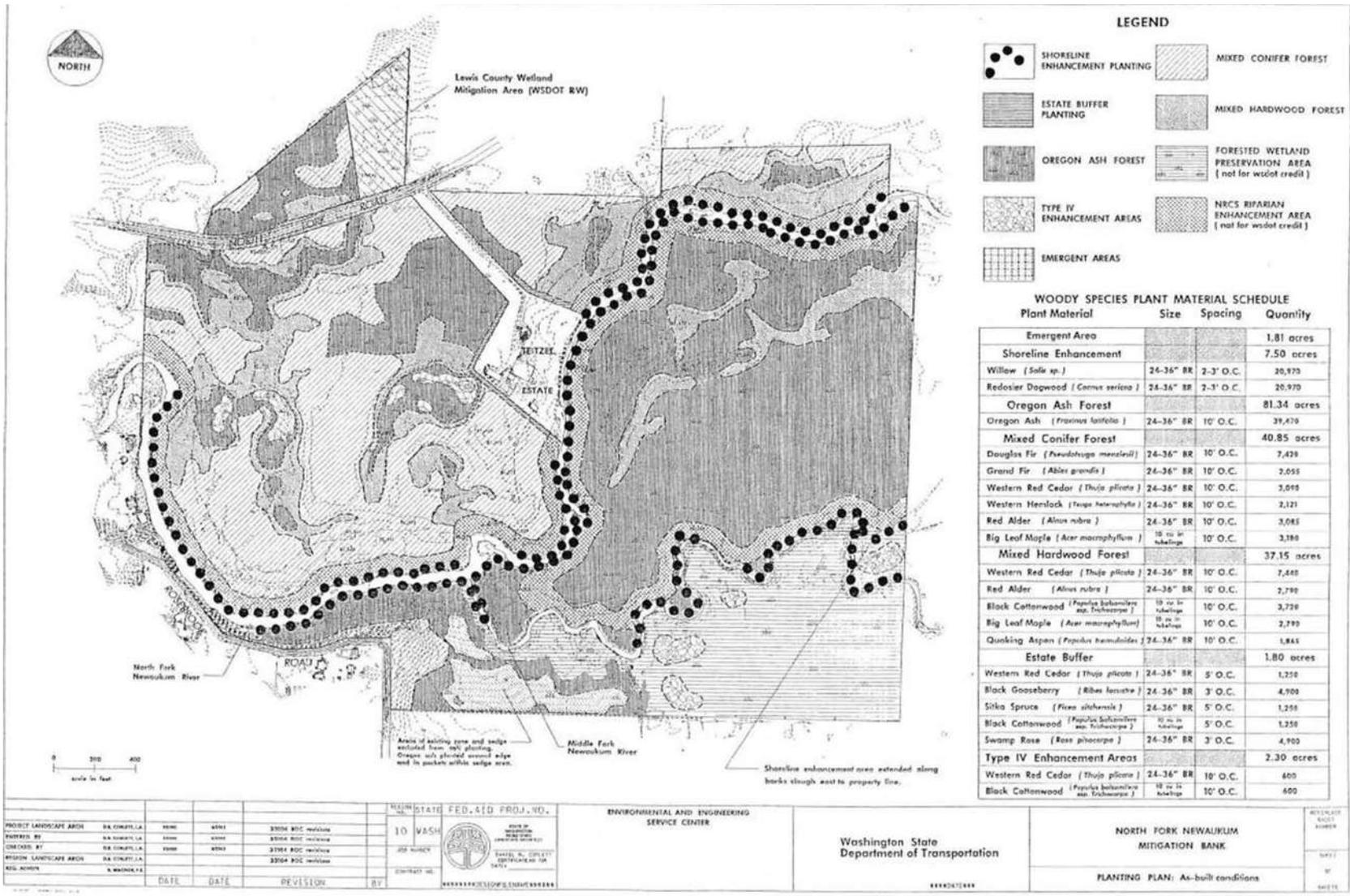
**What is planned for this site?**

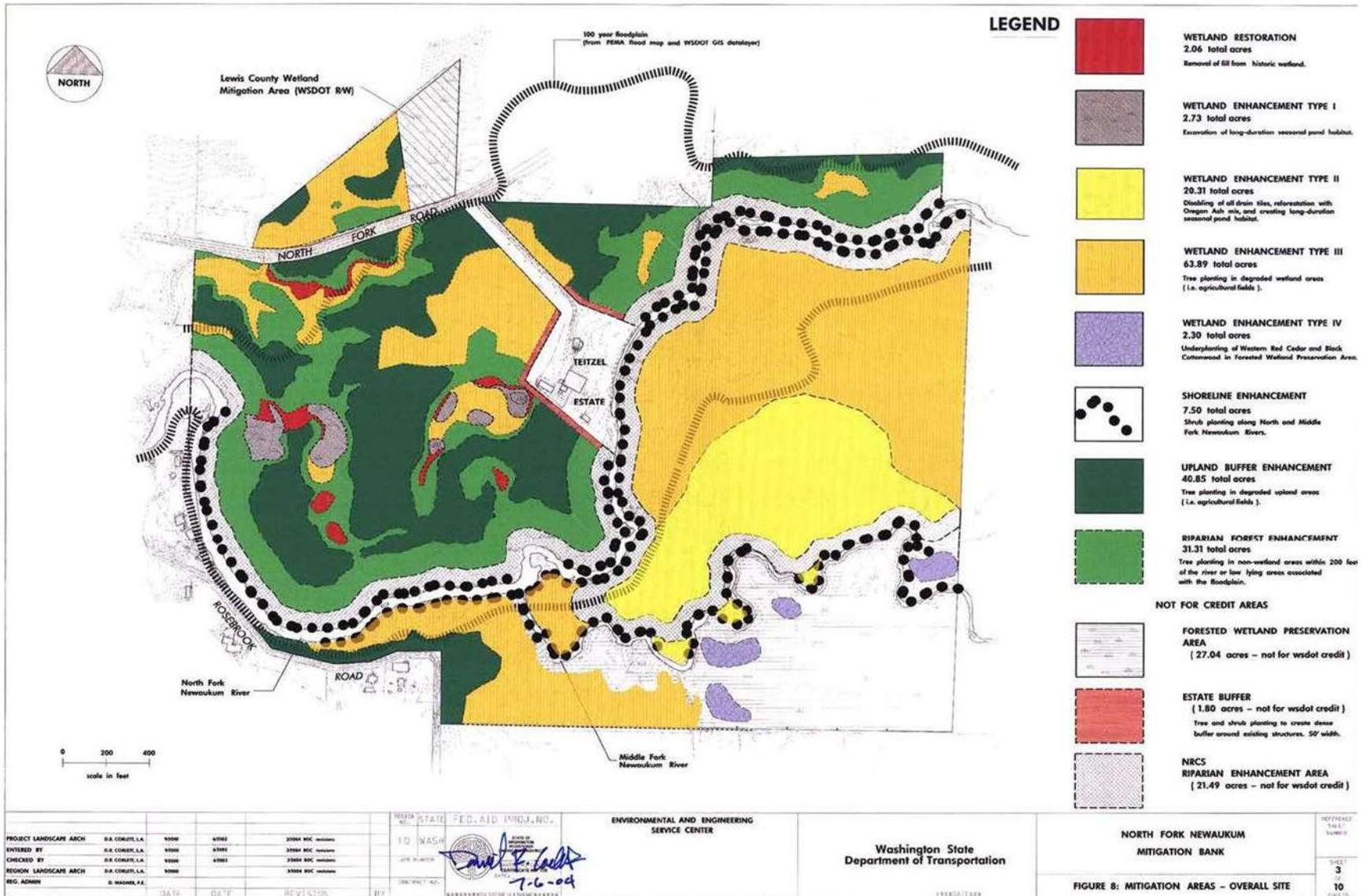
The areas planted as part of the 2013 Adaptive Management Plan will be managed to control weeds and promote establishment of woody vegetation in these areas. The region also has plans to begin the removal of plant tubes from trees in the summer of 2016.

# Appendix 1 – Planting Plan (As-Built)

(from WSDOT 2005)







**Driving Directions:**

From I-5 exit 72 (Rush Road). Turn left off of the ramp. Turn left at the stop sign onto Rush Road and follow Rush Road all the way to the end at a T intersection. Turn right onto Bishop and follow it until the end. Turn right only Jackson Highway. Turn left onto North Fork Road. After you cross the small bridge, past Pfeiffer Rd., turn right onto the paved driveway and park in front of the gate. A key should be obtained from region personnel. .

## Appendix 2 – Data Tables

Species	10% Survival Threshold			
	North Unit	West Unit	East Unit	South Unit
Big Leaf Maple	17	505	40	26
Black Cottonwood	7	312	54	-
Douglas Fir	25	635	-	62
Grand Fir	7	181	-	18
Oregon Ash	203	683	2,540	522
Quaking Aspen	4	156	27	26
Red Alder	17	505	40	18
Western Hemlock	7	181	-	-
Western Red Cedar	26	894	107	27

## Literature Cited

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3. [WSDOT] Washington State Department of Transportation. 2005. North Fork Newaukum Mitigation Bank Instrument. Washington State Department of Transportation, Environmental Affairs Office and Southwest Region. Olympia, WA.
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