

US 12 Tieton River Bridges Replacement Mitigation Site

USACE NWP (23) NWS-2008-080-SOD

South Central Region

2015 MONITORING REPORT

Wetlands Program

Issued March 2016



**Washington State
Department of Transportation**

Environmental Services Office

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US 12 Tieton River Bridges Mitigation Site

USACE NWP (23) NWS-2008-80-SOD



General Site Information	
USACE NWP 23 Number	NWS-2008-80-SOD
Mitigation Location	US 12 between MP 176.4 and MP 177.5, seven miles west of Tieton in Yakima Co.
LLID Number	1209214466940
Construction Date	2010
Monitoring Period	2011-2015
Year of Monitoring	5 of 5
Area of Project Impact	0.089 acre
Type of Mitigation	Wetland Establishment
Planned Area of Mitigation	0.21 acre

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Summary of Monitoring Results and Management Activities (2015)

Performance Standards/Permit Requirements	2015 Results ¹	Management Activities
Wetland Hydrology	Present	
The mitigation site will contain 0.21 acre of wetland	0.31 acre delineated	
Emergent and/or woody cover will be 40% in the created wetland area	80% cover (CI _{80%} = 72-87%)	
Class A weeds and invasive species will be controlled	No Class A weeds observed. Invasive species are being controlled	Weed control

Report Introduction

This report summarizes final-year (Year-5) monitoring activities at the United States (US) 12 Tieton River Bridges Mitigation Site. Included are a site description, the performance standards, an explanation of monitoring methods, and an evaluation of site success. Monitoring activities included vegetation surveys and photo-documentation on July 28, 2015 and a wetland delineation on April 21, 2014.

¹ Estimated values are presented with their corresponding statistical confidence interval. For example, 80% cover (CI_{80%} = 72-87%) means we are 80% confident that the true cover value is between 72% and 87%.

What is the US 12 Tieton River Bridges Mitigation Site?

This mitigation site (Figure 1) is made up of 0.21 acre of wetland establishment and 0.58 acre of upland buffer enhancement. This site was constructed to mitigate for the impacts caused by the realignment of US 12 and replacement of two bridges on US 12 between mileposts 176.4 and 177.5. The established wetland was constructed adjacent to an existing wetland, enlarging it to allow for natural recruitment of hydrophytic vegetation. The functions intended for this wetland include sediment removal, erosion control, shoreline stabilization, and wildlife habitat.

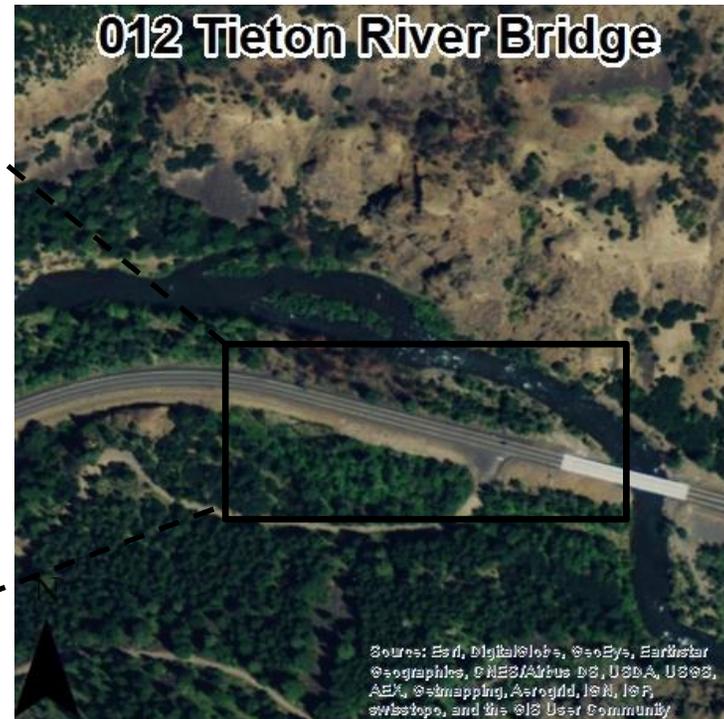
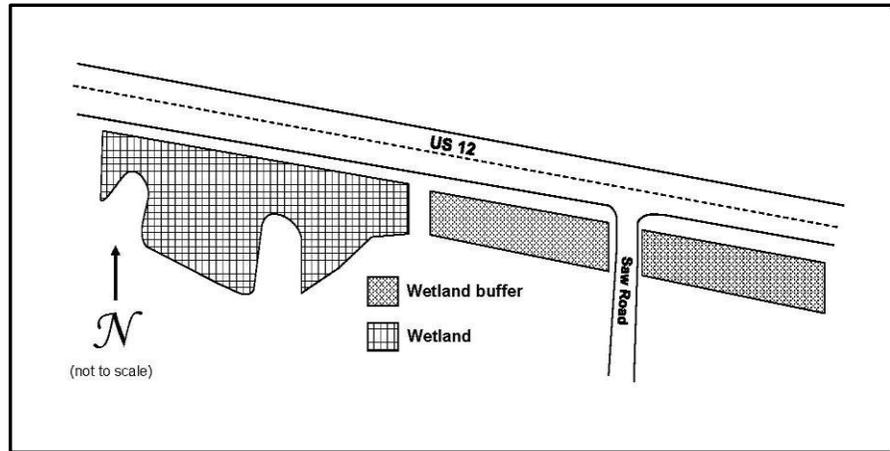


Figure 1 Site Sketch

The US 12 Tieton River Bridges Mitigation Site consists of an established wetland and associated upland buffer. Appendix 1 includes site directions.

What are the performance standards for this site?

Year-5

Performance Standard 1 and Permit Requirement 1 (USACE 2008)

In the intended wetland area, the soils will be saturated to the surface, or standing water will be present within 12 inches of the surface, for at least two consecutive weeks of the growing season in years when rainfall meets or exceeds the 30-year average.

Performance Standard 2 and Permit Requirement 2 (USACE 2008)

The wetland area will be delineated using current methods to assure that the mitigation site contains 0.21 acre of wetland.

Performance Standard 3 and Permit Requirement 3 (USACE 2015)

Total native, hydrophytic vegetation cover, comprised of emergent and/or woody species, shall be at least 40% in the created wetland area.

Performance Standard 4 and Permit Requirement 4 (USACE 2008)

County-listed Class-A noxious weeds and invasives such as reed canarygrass (*Phalaris arundinacea*), non-native blackberry (*Rubus* spp.), purple loosestrife (*Lythrum salicaria*), thistle (*Cirsium* spp.) and non-native knotweeds (*Polygonum cuspidatum*, *P. polystachyum*, *P. sachalinense*, and *P. bohemicum*) will be controlled when observed.

Appendix 1 shows the as built (WSDOT 2010)

How were the performance standards evaluated?

WSDOT staff collected hydrology data and performed a wetland delineation using methods described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (USACE 2008) and a Global Positioning System (Trimble Mapping Grade) (Performance Standards 1 and 2).

The tables below document the sampling methodology used for all of the remaining performance standards (PS) as required by the mitigation plan and permits. For additional details on the methods see the [WSDOT Wetland Mitigation Site Monitoring Methods Paper](#) (WSDOT 2008).

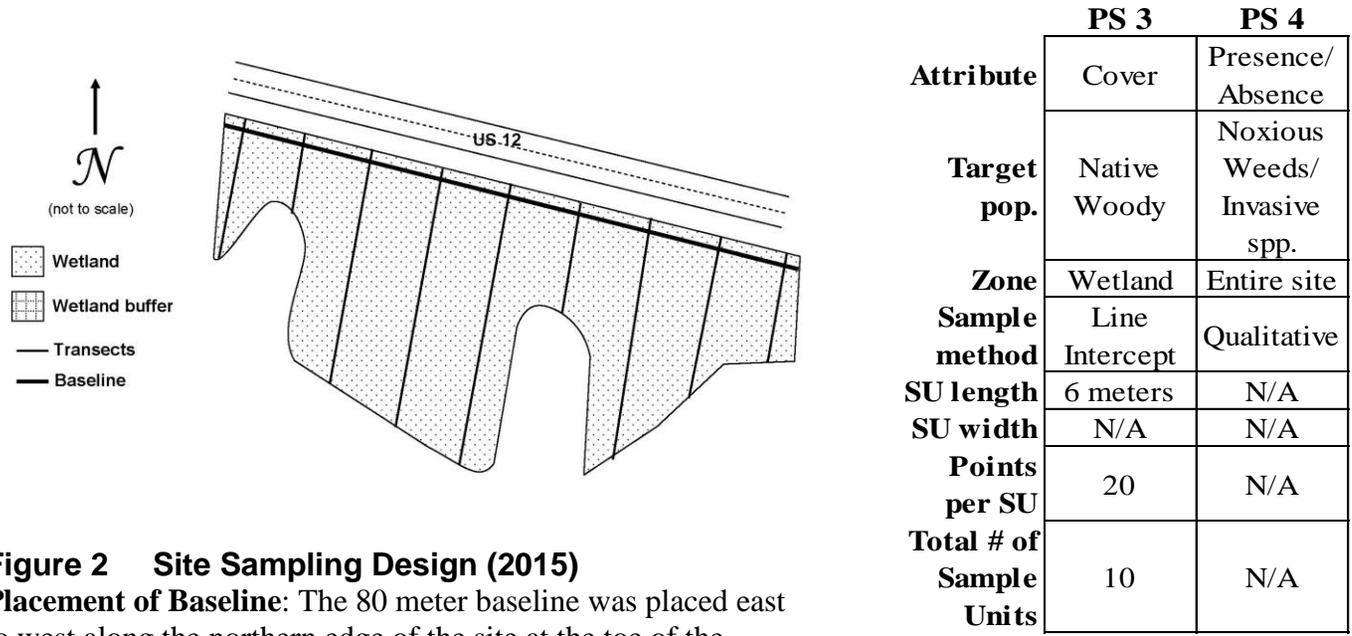


Figure 2 Site Sampling Design (2015)
Placement of Baseline: The 80 meter baseline was placed east to west along the northern edge of the site at the toe of the slope.

Is this site a success?

The wetland on this site has developed into an extension of the adjacent existing wetland with herbaceous vegetation and trees readily colonizing the area. Allowing the area to colonize naturally has been successful in this instance and was made possible by the seed source in the existing wetland.

This wetland community is intended to provide sediment removal, erosion control and general habitat suitability functions. The inundated wetland and vegetated community allows for sediment suspended in the water to settle and also provides habitat for a variety of species. Amphibians and macroinvertebrates in different life stages have been observed using the wetland. A variety of birds ranging from tree swallows to Stellar's jays and American dippers have also been observed in and around the wetland area in the past five years of monitoring.

Results for Performance Standards 1 and 2, Permit Requirements 1 and 2

(Wetland Hydrology and at least 0.21 acre of wetland will be created):

The site was delineated on April 21, 2014 and has exceeded the final-year year five wetland acreage requirements. On February 26, 2015, a request to discontinue hydrology monitoring was sent to USACE.

Results for Performance Standard 3, Permit Requirement 3
(Emergent and/or woody cover will be 40% in the created wetland area):

Cover in the wetland is 80% ($CI_{80\%} = 72-87\%$). Cover in the zone is made up of both emergent and woody species. The community has a diverse and thriving herb understory with a native woody overstory forming along the edges (Photo 1). The dominant species include swordleaf rush (*Juncus ensifolius*), small-fruited bulrush (*Scirpus microcarpus*), and gray alder (*Alnus incana*) (Photo 2).

Results for Performance Standard 4, Permit Requirement 4
(Class A weeds and invasive species will be controlled):

No Class A weeds were observed on site at the time of monitoring. Thistles (*Cirsium spp.*) and narrowleaf cattail (*Typha angustifolia*) were observed in the wetland and there were some diffuse knapweed (*Centaurea diffusa*) near the edge of the buffer. The region has been continuing with mechanical weed control as needed.



Photo 1
Herb cover in the Wetland (July 2015)



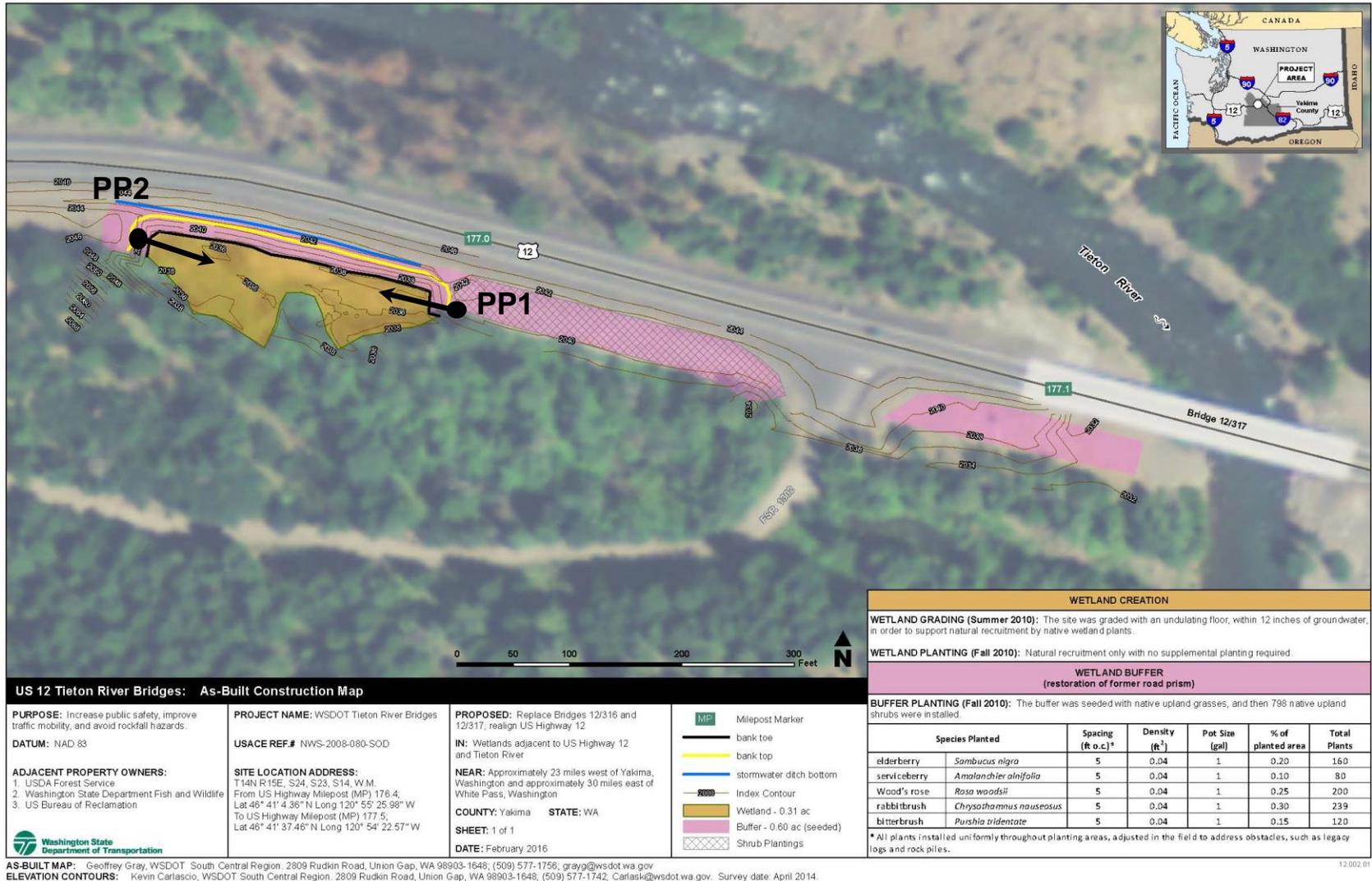
Photo 2
Vegetation Community in the Wetland (July 2015)

What is planned for this site?

The region has plans to pursue close out on this site.

Appendix 1 – As-Built and Photo Point Locations

(WSDOT 2016)



US 12 Tieton River Bridges: As-Built Construction Map

PURPOSE: Increase public safety, improve traffic mobility, and avoid rockfall hazards.
DATUM: NAD 83
ADJACENT PROPERTY OWNERS:
 1. USDA Forest Service
 2. Washington State Department Fish and Wildlife
 3. US Bureau of Reclamation

PROJECT NAME: WSDOT Tieton River Bridges
USACE REF.# NWS-2008-080-SOD
SITE LOCATION ADDRESS:
 T14N R15E, S24, S23, S14, W.M.
 From US Highway Milepost (MP) 176.4;
 Lat 46° 41' 4.36" N Long 120° 55' 25.98" W
 To US Highway Milepost (MP) 177.5;
 Lat 46° 41' 37.46" N Long 120° 54' 22.57" W

PROPOSED: Replace Bridges 12/316 and 12/317, realign US Highway 12
IN: Wetlands adjacent to US Highway 12 and Tieton River
NEAR: Approximately 23 miles west of Yakima, Washington and approximately 30 miles east of White Pass, Washington
COUNTY: Yakima **STATE:** WA
SHEET: 1 of 1
DATE: February 2016

- Milepost Marker
- bank toe
- bank top
- stormwater ditch bottom
- Index Contour
- Wetland - 0.31 ac
- Buffer - 0.60 ac (seeded)
- Shrub Plantings

WETLAND CREATION						
WETLAND GRADING (Summer 2010): The site was graded with an undulating floor, within 12 inches of groundwater, in order to support natural recruitment by native wetland plants.						
WETLAND PLANTING (Fall 2010): Natural recruitment only with no supplemental planting required.						
WETLAND BUFFER (restoration of former road prism)						
BUFFER PLANTING (Fall 2010): The buffer was seeded with native upland grasses, and then 798 native upland shrubs were installed.						
Species Planted		Spacing (ft o.c.) ²	Density (ft. ²)	Pot Size (gal)	% of planted area	Total Plants
elderberry	<i>Sambucus nigra</i>	5	0.04	1	0.20	160
serviceberry	<i>Amelanchier alnifolia</i>	5	0.04	1	0.10	80
Wood's rose	<i>Rosa woodsii</i>	5	0.04	1	0.25	200
rabbitbrush	<i>Chrysothamnus nauseosus</i>	5	0.04	1	0.30	239
bitterbrush	<i>Purshia tridentate</i>	5	0.04	1	0.15	120

* All plants installed uniformly throughout planting areas, adjusted in the field to address obstacles, such as legacy logs and rock piles.

AS-BUILT MAP: Geoffrey Gray, WSDOT South Central Region, 2809 Rudkin Road, Union Gap, WA 98903-1648; (509) 577-1756; grayg@wsdot.wa.gov
ELEVATION CONTOURS: Kevin Carlasko, WSDOT South Central Region, 2809 Rudkin Road, Union Gap, WA 98903-1648; (509) 577-1742; Carlasko@wsdot.wa.gov. Survey date: April 2014.

Appendix 2 – Photo Points

The photographs below were taken from permanent photo-points on July 28, 2015 and document current site development.



Photo Point 1



Photo Point 2

Driving Directions:

From I-5 take Exit 68 for US-12 toward Morton/Yakima. Travel on US 12 for approximately 110 miles to Milepost 177. Park on the south side of the road where Forest Service Road 1302 connects to US 12.

Appendix 3 – Wetland Delineation

WETLAND DELINEATION REPORT

US 12 Tieton River Bridges Mitigation Site

Tieton River Bridges Replacement Project
USACE (NWP 23) NWS-2008-80-SOD

Yakima County, Washington

Prepared by:
Tatiana Dreisbach
WSDOT Environmental Services Office
Olympia, Washington

November 2014



Washington State
Department of Transportation

Introduction

This report was prepared by the Washington State Department of Transportation (WSDOT) to describe the wetland boundary delineation for the US 12 Tieton River Bridges mitigation site. Field work was conducted by WSDOT wetland biologists Tatiana Dreisbach and Sean Patrick, on April 21, 2014. The delineation identifies 0.31 acre of wetland within the mitigation site boundaries.

General Information for the Us 12 Tieton River Bridges mitigation site		
Location:	S14, T14N, R15E. Yakima County. (Vicinity map, Figure 1)	
	USACE NWP 23 Number	NWS-2008-80-SOD
	Long./Lat. ID Number	1209214466940
	Land Resource Region (LRR)	B
	Major Land Resource Area (MLRA)	8
	Construction Date	2010
	Monitoring Period	2011 - 2015
	Year of Monitoring	4 of 5 (in 2014)
Area of Project Impact¹	0.089 acre	
Total Delineated Wetland Area	0.31 acres	

¹ Project impact numbers from USACE Nationwide Permit 23 with 0.089 acre impacts (USACE 2008).

Location

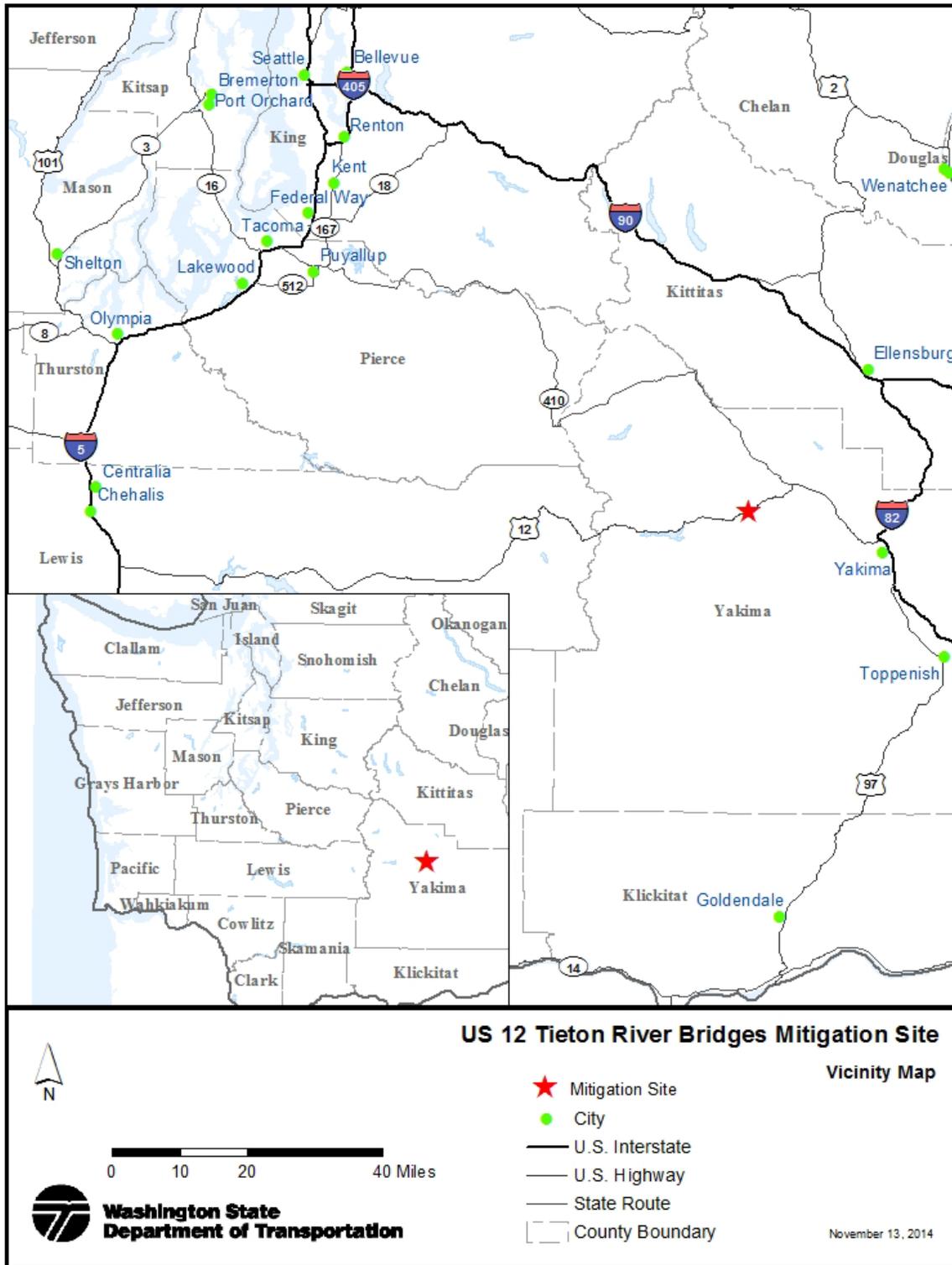


Figure 1. Vicinity Map

Methods

Wetland boundaries within the US 12 Tieton River Bridges mitigation site were delineated using routine methods described in the:

- Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987),
- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (USACE 2008)

Wetland boundaries were delineated based on on-site observations of hydrology, soils, and plant communities, in conjunction with background information.

A Global Positioning System (GPS) Trimble GeoXT mapping grade unit was used to record the wetland boundaries and sampling point locations (Figure 2). Wetland boundary points were recorded at regular intervals and at any change in direction along the boundary.

Wetland Delineation and Study Area

Study Area

Wetlands described in this report were assessed only within the wetland mitigation site boundary (Figure 2). Wetland preservation areas are present beyond the mitigation area to the south. These preservation areas were not included in this delineation.

Wetlands

The US 12 Tieton River Bridges mitigation site has depressionnal wetland areas with two young Cowardin classes forming. Palustrine emergent (PEM) areas are present in swales at lower elevations with the beginnings of a palustrine scrub-shrub (PSS) community forming on higher elevation terraces in the wetland.

The delineation determined 0.31 acre of wetland were present within the US 12 Tieton River Bridges mitigation site. The small upland area within the delineated wetland boundary (Figure 2) was not included in calculating the wetland area. Delineation data were collected at three sampling points and recorded on wetland determination data forms (Appendix A). Paired wetland and upland sample points were used to define the wetland edge. Additional wetland sample points characterize various wetland vegetation communities. Data recorded on wetland determination data forms characterize typical wetland and upland conditions observed on site. Vegetation, soils, and hydrology were examined in many additional sampling locations to determine the wetland boundary.

Precipitation

The Regional Delineation Supplement Version 2.0 (USACE 2008) recommends using methods described in Chapter 19 in *Engineering Field Handbook* (NRCS 1997) to determine if precipitation occurring in the three full months prior to the site visit was normal, drier than normal, or wetter than normal. Actual rainfall is compared to the normal range of the 30-year average. When considering the three prior months as whole, normal precipitation conditions were present prior to field work. One of the three months prior to field work were within the normal range with the first prior month normal, the second month wetter than normal, and the third prior month drier than normal (Appendix B-1).

Light precipitation was recorded in the ten days preceding field work (Appendix B-2).

Growing Season

The following evidence of the growing season was observed at the time of the delineation:

- Vegetative portions of herbaceous plants were newly emerging
- Bud break had occurred on some woody species.

GPS Data - US 12 Tieton River Bridge, 4/21/2014



Figure 2. Study area in blue, wetland boundary in red, and sampling point locations in black.

US 12 Tieton River Mitigation Site – Wetland Delineation Summary		
Total Delineated Wetland Area	0.31 acre	
	Wetland Determination Data Form(s)	Appendix A; Sampling Points W1-SP1 and W1-SP2
	Upland Determination Data Form(s)	Appendix A; Sampling Point W1-SP3
	Delineator(s)	Tatiana Dreisbach Sean Patrick
	Delineation Date	April 21, 2014
Vegetation	Trees – none Shrubs – sandbar willow (<i>Salix exigua</i>), willows (<i>Salix spp.</i>), black cottonwood (<i>Populus balsamifera</i>) Herbs – broadleaf cattail (<i>Typha latifolia</i>), swordleaf rush (<i>Juncus ensifolius</i>), Idaho fescue (<i>Festuca idahoensis</i>), field horsetail (<i>Equisetum arvense</i>), common yarrow (<i>Achillea millefolium</i>),	
Soils	Soils examined to a depth of 10 inches exhibited hydric characteristics. Cobbles were present below 10 inches. Matrix colors of 5Y 2.5/1 and 5Y 3/2 were observed. Redoximorphic concentrations and depletions were observed in the 5 to 10 inch layer. Indicator Redox Dark Surface (F6) met.	
Hydrology	Water in the observation pits ranged from 1 inch below the soil surface to 8 inches below the surface. Surface water up to 6 inches deep was observed in some areas of the wetland with lower elevations. Groundwater appears to be the main source of hydrology. Precipitation and snow melt also contribute to the hydrologic regime of this wetland.	
Rationale for Delineation	Positive indicators of all three wetland criteria are present. Placement of boundary determined by presence/absence of hydric soils and hydrology indicators. Topographic break along the road prism to the north and along wetland preservation areas beyond the mitigation area to the south also helped inform placement of the wetland boundary.	

Limitations

This wetland delineation report documents the investigation, best professional judgment and conclusions of WSDOT based on the site conditions encountered at the time of this study. The wetland delineation was performed in compliance with accepted standards for professional wetland biologists and applicable federal, state, and local ordinances. It is correct and complete to the best of our knowledge. It should be considered a preliminary jurisdictional determination of wetlands and other waters until it has been reviewed and approved in writing by the appropriate jurisdictional authorities.

References

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Appendix A —Wetland Determination Data Forms

Wetland Delineation Data Forms for:

W1-SP1

W1-SP2

W1-SP3

Wetland polygons, sampling point locations, and wetland names shown in Figure 2.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: US 12 Tieton River Bridges **City/County:** n/a / Yakima County **Sampling Date:** 21-Apr-14
Applicant/Owner: WSDOT **State:** WA **Sampling Point:** w1-sp1
Investigator(s): Tatiana Dreisbach and Sean Patrick **Section, Township, Range:** S 14 T 14N R 15E
Landform (hillslope, terrace, etc.): Depression **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 °
Subregion (LRR): LRR B **Lat.:** 46.695 **Long.:** -120.917 **Datum:** NAD83HARN
Soil Map Unit Name: Weirman gravelly fine sandy loam **NWI classification:** PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
Are Vegetation , **Soil** , **or Hydrology** **significantly disturbed?** **Are "Normal Circumstances" present?** Yes No
Are Vegetation , **Soil** , **or Hydrology** **naturally problematic?** (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks:	

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status	
Tree Stratum (Plot size: <u>10 ft x 10 ft</u>)				Dominance Test worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
3. _____	_____	<input type="checkbox"/> 0.0%	_____	
4. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>10 ft x 10 ft</u>)				
1. _____	0	<input type="checkbox"/> 0.0%	_____	
2. _____	0	<input type="checkbox"/> 0.0%	_____	
3. _____	0	<input type="checkbox"/> 0.0%	_____	
4. _____	0	<input type="checkbox"/> 0.0%	_____	
5. _____	0	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
Herb Stratum (Plot size: <u>5 ft x 5 ft</u>)				
1. <u>Typha latifolia</u>	60	<input checked="" type="checkbox"/> 85.7%	OBL	
2. <u>Juncus ensifolius</u>	10	<input type="checkbox"/> 14.3%	FACW	
3. _____	0	<input type="checkbox"/> 0.0%	_____	
4. _____	0	<input type="checkbox"/> 0.0%	_____	
5. _____	0	<input type="checkbox"/> 0.0%	_____	
6. _____	0	<input type="checkbox"/> 0.0%	_____	
7. _____	0	<input type="checkbox"/> 0.0%	_____	
8. _____	0	<input type="checkbox"/> 0.0%	_____	
9. _____	0	<input type="checkbox"/> 0.0%	_____	
10. _____	0	<input type="checkbox"/> 0.0%	_____	
11. _____	0	<input type="checkbox"/> 0.0%	_____	
70 = Total Cover				
Woody Vine Stratum (Plot size: <u>5 ft x 5 ft</u>)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
% Bare Ground in Herb Stratum: <u>30</u>		% Cover of Biotic Crust: <u>0</u>		
Prevalence Index worksheet: Total % Cover of: Multiply by OBL species <u>60</u> x 1 = <u>60</u> FACW species <u>10</u> x 2 = <u>20</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Total s: <u>70</u> (A) <u>80</u> (B) Prevalence Index = B/A = <u>1.143</u>				
Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is > 50% <input checked="" type="checkbox"/> Prevalence Index is ≤ 3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)				
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>				
Remarks:				

* Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: US 12 Tieton River Bridges **City/County:** n/a / Yakima County **Sampling Date:** 21-Apr-14
Applicant/Owner: WSDOT **State:** WA **Sampling Point:** w1-sp2
Investigator(s): Tatiana Dreisbach and Sean Patrick **Section, Township, Range:** S 14 T 14N R 15E
Landform (hillslope, terrace, etc.): Depression **Local relief (concave, convex, none):** concave **Slope:** 0.0 % / 0.0 °
Subregion (LRR): LRR B **Lat.:** 46.695 **Long.:** -120.917 **Datum:** NAD83HARN
Soil Map Unit Name: Weirman gravelly fine sandy loam **NWI classification:** PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks:	

VEGETATION - Use scientific names of plants.

Stratum	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status	Dominance Test worksheet:
Tree Stratum (Plot size: <u>10 ft x 10 ft</u>)				Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
3. _____	_____	<input type="checkbox"/> 0.0%	_____	
4. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>10 ft x 10 ft</u>)				Prevalence Index worksheet: Total % Cover of: Multiply by OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>10</u> x 2 = <u>20</u> FAC species <u>11</u> x 3 = <u>33</u> FACU species <u>22</u> x 4 = <u>88</u> UPL species <u>2</u> x 5 = <u>10</u> Column Total s: <u>45</u> (A) <u>151</u> (B) Prevalence Index = B/A = <u>3.356</u>
1. <u>Salix exigua</u>	10	<input checked="" type="checkbox"/> 76.9%	FACW	
2. <u>Salix spp.</u>	2	<input type="checkbox"/> 15.4%	_____	
3. <u>Populus balsamifera</u>	1	<input type="checkbox"/> 7.7%	FAC	
4. _____	0	<input type="checkbox"/> 0.0%	_____	
5. _____	0	<input type="checkbox"/> 0.0%	_____	
13 = Total Cover				
Herb Stratum (Plot size: <u>5 ft x 5 ft</u>)				
1. <u>Equisetum arvense</u>	10	<input checked="" type="checkbox"/> 29.4%	FAC	
2. <u>Festuca idahoensis</u>	15	<input checked="" type="checkbox"/> 44.1%	FACU	
3. <u>Phleum pratense</u>	2	<input type="checkbox"/> 5.9%	FACU	
4. <u>Phacelia hastata</u>	2	<input type="checkbox"/> 5.9%	UPL	
5. <u>Achillea millefolium</u>	5	<input type="checkbox"/> 14.7%	FACU	
6. _____	0	<input type="checkbox"/> 0.0%	_____	
7. _____	0	<input type="checkbox"/> 0.0%	_____	
8. _____	0	<input type="checkbox"/> 0.0%	_____	
9. _____	0	<input type="checkbox"/> 0.0%	_____	
10. _____	0	<input type="checkbox"/> 0.0%	_____	
11. _____	0	<input type="checkbox"/> 0.0%	_____	
34 = Total Cover				
Woody Vine Stratum (Plot size: <u>5 ft x 5 ft</u>)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
% Bare Ground in Herb Stratum: <u>66</u>		% Cover of Biotic Crust <u>0</u>		
Remarks:				

Hydrophytic Vegetation Indicators:
 Dominance Test is > 50%
 Prevalence Index is ≤3.0¹
 Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)

¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No

* Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: w1-sp2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)		%	Type ¹	Loc ²		
0-5	5Y	2.5/1	100						Sand	
5-10	5Y	3/2	80	7.5YR	4/6	15	C	M	Sandy Loam	Concentration is prominent
				5Y	3/1	5	D	M		

¹ Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Muck Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox depressions (F8)
- Vernal Pools (F9)

Indicators for Problematic Hydric Soils:³

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³ Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: cobbles
 Depth (inches): 10

Hydric Soil Present? Yes No

Remarks:

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Plowed Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): 0
 Water Table Present? Yes No Depth (inches): 8
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): 1

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: US 12 Tieton River Bridges **City/County:** n/a / Yakima County **Sampling Date:** 21-Apr-14
Applicant/Owner: WSDOT **State:** WA **Sampling Point:** w1-sp3
Investigator(s): Tatiana Dreisbach and Sean Patrick **Section, Township, Range:** S 14 T 14N R 15E
Landform (hillslope, terrace, etc.): Depression **Local relief (concave, convex, none):** concave **Slope:** 5.0 % / 2.9 °
Subregion (LRR): LRR B **Lat.:** 46.695 **Long.:** -120.917 **Datum:** NAD83HARN
Soil Map Unit Name: Weirman gravelly fine sandy loam **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: Salix is planted, not enough hydrology to support hydric soils or a hydrophytic herb layer of naturalizing plant community.	

VEGETATION - Use scientific names of plants.

Stratum	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status	Dominance Test worksheet:
Tree Stratum (Plot size: 10 ft x 10 ft)				Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
3. _____	_____	<input type="checkbox"/> 0.0%	_____	
4. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
Sapling/Shrub Stratum (Plot size: 10 ft x 10 ft)				Prevalence Index worksheet: Total % Cover of: Multiply by OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>5</u> x 2 = <u>10</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>70</u> x 4 = <u>280</u> UPL species <u>2</u> x 5 = <u>10</u> Column Total s: <u>77</u> (A) <u>300</u> (B) Prevalence Index = B/A = <u>3.896</u>
1. Salix exigua	5	<input checked="" type="checkbox"/> 100.0%	FACW	
2. _____	0	<input type="checkbox"/> 0.0%	_____	
3. _____	0	<input type="checkbox"/> 0.0%	_____	
4. _____	0	<input type="checkbox"/> 0.0%	_____	
5 = Total Cover				
Herb Stratum (Plot size: 5 ft x 5 ft)				
1. Festuca idahoensis	60	<input checked="" type="checkbox"/> 83.3%	FACU	
2. Achillea millefolium	10	<input type="checkbox"/> 13.9%	FACU	
3. Phacelia hastata	2	<input type="checkbox"/> 2.8%	UPL	
4. _____	0	<input type="checkbox"/> 0.0%	_____	
5. _____	0	<input type="checkbox"/> 0.0%	_____	
6. _____	0	<input type="checkbox"/> 0.0%	_____	
7. _____	0	<input type="checkbox"/> 0.0%	_____	
8. _____	0	<input type="checkbox"/> 0.0%	_____	
9. _____	0	<input type="checkbox"/> 0.0%	_____	
10. _____	0	<input type="checkbox"/> 0.0%	_____	
11. _____	0	<input type="checkbox"/> 0.0%	_____	
72 = Total Cover				
Woody Vine Stratum (Plot size: 5 ft x 5 ft)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
0 = Total Cover				
% Bare Ground in Herb Stratum: <u>28</u>		% Cover of Biotic Crust <u>0</u>		

Remarks:

* Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: w1-sp3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR	4/2	100				Coarse Loamy Sand	gravel s and cobbels

¹ Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils:³

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Muck Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox depressions (F8)
- Vernal Pools (F9)

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

³ Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: cobbles
 Depth (inches): 12

Hydric Soil Present? Yes No

Remarks:

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (2 or more required)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Plowed Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): _____

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitor well, aerial photos, previous inspections), if available: _____

Remarks:

Soils moist at 12 inches but not saturated.

Appendix B — Precipitation Data

Appendix B-1. Comparison of Observed and Normal Precipitation (NRCS 1997)

Monthly precipitation data for Moxee City, Washington.

		Long-term rainfall records ^a							
	Month	3 yrs. in 10 less than	Average	3 yrs. in 10 more than	Rain fall ^a	Condition dry, wet, normal ^b	Condition Value	Month weight value	Product of previous two columns
1 st prior month	Mar	0.36	0.73	0.89	0.66	N	2	3	6
2 nd prior month	Feb	0.35	0.65	0.81	1.13	W	3	2	6
3 rd prior month	Jan	0.48	0.97	1.19	0.09	D	1	1	1
								Sum	13

^a NRCS 2014

^b Conditions are considered normal if they fall within the low and high range around the average.

Note: If sum is

- 6 - 9 then prior period has been drier than normal
- 10 - 14 then period has been normal
- 15 - 18 then period has been wetter than normal

Condition value:

- Dry (D) =1
- Normal (N) =2
- Wet (W) =3

Conclusions: Normal precipitation conditions were present prior to the field visit.

Appendix B-2. Daily Precipitation 10 days preceding field work, Moxee City, Washington

Date (2014)	Daily Precipitation (inches) ^a
Apr 20	0.00
Apr 19	0.00
Apr 18	0.00
Apr 17	0.06
Apr 16	0.00
Apr 15	0.00
Apr 14	0.00
Apr 13	0.00
Apr 12	0.00
Apr 11	0.00

^aNOAA 2014

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