

## **Appendix D: Wetland Delineation (Amon Creek)**



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October 28, 2022

Northwest Hydraulic Consultants, Inc  
12787 Gateway Drive South  
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Attention: Derek Stuart, Principal

Subject: Critical Areas Assessment Report  
Lower Yakima River Coldwater Refugia Improvements Project  
Richland, Washington  
GeoEngineers File No: 0371-239-00

## **1.0 INTRODUCTION**

GeoEngineers, Inc. (GeoEngineers) was contracted by Northwest Hydraulic Consultants, Inc. (NHC) to perform wetland and stream ordinary high water mark (OHWM) delineation and assessment for the Lower Yakima River Coldwater Refugia Improvements Project (project) at the Riverview Preserve in Richland, Washington (Figure 1, Vicinity Map). The project site is located near the confluence of Amon Creek (wasteway) and the Yakima River on property owned and managed by the United States Army Corps of Engineers (USACE). We understand the project site currently experiences thermal issues associated with warm water in the lower reaches of the river, which negatively impacts migratory salmonids. The proposed project would re-route the colder water in the lower reach of Amon Creek to the north and into a naturally deep pool in the Yakima River. In addition, a flow deflector is proposed within the Yakima River mainstem channel to isolate the Amon Creek cold water during summertime low flows. This report is intended to provide baseline wetland and stream data that will be considered through the design process and used for environmental permitting.

### **1.1. Project Location and Site Description**

The proposed project is located at and near the confluence of Amon Creek (wasteway) and the Yakima River in Richland, Washington, in Benton County, Washington in Section 24 of Township 9 N and Range 28 E of the Willamette Meridian (Figure 1). The site is located on Benton County parcel # 12498 and is owned and managed by the USACE (Benton County 2022). The site is situated at an elevation of approximately 350 feet above mean sea level. The approximately 19.16-acre assessment area focused on the proposed approximate limits of disturbance (based on conceptual design plans provided to GeoEngineers) for the project, as depicted on Figure 2, Wetland and Stream Exhibit.

The site contains riparian areas, upland areas, wetland habitat, one stream (Amon Creek) and one river (Yakima River) (Figure 2). One wetland (Wetland A) was identified on the left bank of Amon Creek, within the southern portion of the project area. The site is surrounded by undeveloped forested and cleared land. Site photographs are included in Appendix A, Site Photographs.

## 2.0 WETLAND AND STREAM OHWM DELINEATION

Components of the wetland and stream delineation were conducted in general accordance with the *USACE Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0 dated September 2008) (USACE 2008). However, due to concerns associated with potential historical/cultural resources in the Yakima Delta, USACE requested no soil pits be advanced as part of this assessment. Thus, the delineation was conducted using a two-parameter approach with identification of vegetation and hydrology, and ancillary soils data obtained from readily available public sources. This approach was discussed with and approved by the USACE and the Washington State Department of Ecology (Ecology) personnel on April 28, 2022.

### 2.1. Data Review

A Review of historical aerial photographs, United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) online maps, and soils, United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) maps, and other supplemental maps was conducted as part of the data review. Results of the review are provided in the following sections.

#### 2.1.1. Historical Aerial Review

Historical aerial photographs of the site were reviewed from the Central Washington Historical Aerial Photograph Project (CWHAPP 2022), available online Google Earth photographs and U.S. Geological Survey (USGS) EarthExplorer photographs (USGS 2022).

- **1948 to 1963:** The site appears to be farmland/pastureland. Amon wasteway is visible at the confluence with the Yakima River. There are no other indications of wetland features or inundation in the photographs.
- **1970 to 2018:** The site appears to be heavily vegetated. Amon Creek is visible in the photographs, but no other waters or wetland features are evident.



1955 aerial photograph depicts farmland/pastureland at the site



2021 aerial photograph depicts heavy vegetation at the site

### 2.1.2. NWI Map Review

Environmental maps of the project site were collected and reviewed as part of a desktop inventory. The USFWS NWI online mapper depicts the Yakima River along the northwest boundary of the site, Amon Creek extending through the site, and freshwater emergent and forested/shrub wetland habitat throughout the project area (USFWS 2022). The NWI map is included in Appendix B, Background Data and Maps.

### 2.1.3. Soils Maps Review

The USDA NRCS Web Soil Survey shows one soil type within the project site: Pasco silt loam, 0 to 2 percent slopes, which is not on the National Hydric Soils List (USDA-NRCS 2022). In addition, the former Soil Conservation Service (SCS) soils survey for Benton County, Washington describes the shallow soils in a pasture from the NW  $\frac{1}{4}$ , SW  $\frac{1}{4}$ , SW  $\frac{1}{4}$  of Section 24, Township 9 N, and Range 28 E (USDA-SCS 1971). This soil sample location would have been located near the southern limits of the study area. The representative soil profile from the upper section of this sample described the following:

- 0 to 6 inches: Very dark grayish-brown (10YR 3/2) silt loam; slightly sticky and slightly plastic; faint mottles.
- 6 to 20 inches: very dark grayish-brown (10YR 3/2) silt loam; slightly sticky and slightly plastic common; medium, faint mottles.
- 20 to 33 inches: very dark gray (10YR 3/1) heavy silt loam, slightly hard, friable, sticky and slightly plastic.

Based on the profile described above, the subsurface soils from the pasture could have been considered hydric if the mottles were redox concentrations at a sufficient percent to meet the F3 (depleted matrix) criteria. However, there is no description of the percentage of mottling and there were no other samples described in the SCS (USDA-SCS 1971) report within the pasture near the site. The soils information is included in Appendix B.



#### 2.1.4. Supplemental Maps

Additional information was obtained from the Richland Geological Hazards and Critical Areas Map (Richland 2022a); Washington Department of Natural Resources (WADNR) Forest Practices Application Mapping Tool (FPAMT) (WADNR 2022); Richland Utilities Map (Richland 2022b); the Northwest Indian Fisheries Commission (NWIFC) Statewide Washington Integrated Fish Distribution (SWIFD) online mapping application (NWIFC 2022); and the Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) Interactive map viewer (WDFW 2022).

The Richland Geological Hazards and Critical Areas map depicts the project site within floodplain of the Yakima delta (Richland 2022a). The FPAMT depicts the Yakima River as a shoreline stream and Amon Creek as a watercourse with an unknown stream type (WADNR 2022). FPAMT does not accurately map the location of Amon Creek, but instead depicts it flowing southeast of the site. The city of Richland utilities map (Richland 2022b) depicts Amon Creek flowing north and east through residential areas before crossing under Columbia Park Trail through a 52-inch-diameter culvert; however, Amon Creek is not depicted north of Columbia Park Trail. Aerial imagery from the city of Richland (Richland 2022b) and 2015 Light Detection and Ranging (LiDAR) (Quantum Spatial 2015) clearly show Amon Creek flowing north under Columbia Park Trail, northwest through the Riverview Preserve and the project area, and discharging to the Yakima River. Federal Emergency Management Agency (FEMA) maps the project area within Zone A10 flood zone (FEMA 1984).

The SWIFD data depicts multiple fish species within the Yakima River and Amon Creek (NWIFC 2022). Table 1 below summarizes these species and their distribution type.

**TABLE 1. FISH SPECIES PRESENT WITHIN THE PROJECT AREA**

Waterbody	Distribution Type	Species
Yakima River	Presumed Presence	Brown Trout ( <i>Salmo trutta</i> )
		Walleye ( <i>Sander vitreus</i> )
	Documented Presence	Bull Trout ( <i>Salvelinus confluentus</i> )
		Mountain Whitefish ( <i>Prosopium williamsoni</i> )
		Largemouth Bass ( <i>Micropterus salmoides</i> )
		Summer Steelhead ( <i>Oncorhynchus mykiss</i> )
		Rainbow Trout ( <i>O. mykiss</i> )
		Coho Salmon ( <i>O. kisutch</i> )
		Spring Chinook Salmon ( <i>O. tshawytscha</i> )
	Documented Spawning	Fall Chinook Salmon ( <i>O. tshawytscha</i> )
		Summer Chinook Salmon ( <i>O. tshawytscha</i> )
Amon Creek	Documented Spawning	Coho Salmon ( <i>O. kisutch</i> )
	Documented Presence	Spring Chinook Salmon ( <i>O. tshawytscha</i> )

The WDFW PHS map depicts freshwater emergent wetland, freshwater forested/shrub wetland, riverine habitat, biodiversity area and corridor, waterfowl concentrations, black-crowned night-heron (*Nycticorax nycticorax*) and shrub-steppe habitat at the project site. The PHS map also depicts eastside steppe habitat and Townsend's ground squirrel (*Uroditellus townsendii*) within 1 mile of the project site (WDFW 2022). The FPAMT stream figure, Richland critical areas figure, FEMA map, Richland utilities figure, SWIFD maps and PHS report are included in Appendix B.

## 2.2. Field Assessment Methods

GeoEngineers' biologists conducted field assessments on May 10, 2022 and October 19, 2022, at the project site. The limits of disturbance, as illustrated on Figure 2, was defined as the project's approximate study area. GeoEngineers characterized and delineated wetland features; the OHWM of Amon Creek; and the right bank of the Yakima River within the approximately 19.16-acre study area (Figure 2). A photographic record was collected during the field visit to document existing site conditions and included as Appendix A.

The OHWM of Amon Creek and the Yakima River was evaluated by examining breaks in the topography, drift lines and signs of water marks, according to USACE protocol as referenced from Regulatory Guidance Letter (No. 05-05), Ordinary High-Water Mark Identification, December 7, 2005, (Riley 2005) and according to the Washington State Department of Ecology (Ecology) 2016 guidance (Anderson et al. 2016). The Washington Administrative Code (WAC) was also referenced for the definition of OHWM (WAC 173-22-030 § 11).

Per Richland Municipal Code (RMC) 22.10, components of the wetland delineation were conducted in accordance with the *USACE Wetlands Delineation Manual* (Environmental Laboratory 1987), and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: And West Region* (USACE 2008). However, no subsurface soils data were collected during the field assessment. This omission was requested by USACE to prevent any disturbance to potential historical and cultural resources in the Yakima Delta. Ancillary soils data were compiled from readily available sources described in Section 2.1.3 Soils Maps Review. The wetlands were rated using the *2014 Washington State Wetland Rating System for Eastern Washington* (Hruby 2014) and classified according to RMC 22.10.100. Appendix C, Wetland Determination Datasheets includes the sample plot data forms and Appendix D, Wetland Rating Forms contains the Ecology Wetland Rating Forms.

## 2.3. Field Assessment Results


GeoEngineers identified one wetland (Wetland A), the OHWM of one stream (Amon Creek) and one River (Yakima River) within the assessment area. Figure 2 shows the delineated wetland and stream features within the assessment area. Representative photos have been included in Appendix A. The project site and surrounding area are largely influenced by the hydrology of the Yakima River. Amon Creek flows northwest through the project site to the Yakima River, which flows northeast adjacent to the project site and is a tributary to the Columbia River approximately 1.5 miles downstream. Dominant vegetation within Wetland A and along the banks of Amon Creek and the Yakima River consists of Russian olive (*Eleagnus angustifolia*), bur chervil (*Anthriscus caucalis*), and reed canary grass (*Phalaris arundinacea*).

### 2.3.1. Wetlands

GeoEngineers identified and delineated one riverine wetland (Wetland A) along the left bank of Amon Creek approximately 600 feet upstream of its confluence with the Yakima River. Wetland A is a scrub-shrub wetland dominated by Russian olive, reed canary grass and grey alder (*Alnus incana*).

One formal wetland sample plot and eight upland plots were established. Data from the plots are presented in Appendix C and their locations are depicted in Figure 2. The USACE requires an archaeologist be present for any land disturbing activities on their properties, especially within areas with higher potential for historical use; therefore, soils were not examined during the site visit. Per guidance from David Moore with the Spokane Regulatory Field Office of USACE, wetland boundaries were identified using primary and secondary wetland indicators, including hydrophytic vegetation, hydrology, topography and geomorphic position. Ancillary soils data were obtained from publicly available records, as described in Section 2.1.3. Table 2 below summarizes information regarding the wetland features identified within the assessment area.

**TABLE 2. SUMMARY OF WETLAND A CHARACTERISTICS**

Wetland A - Information		
Location	Left bank of Amon Creek upstream of its confluence with the Yakima River	
WRIA	37 – Lower Yakima	
Local Jurisdiction	City of Richland	
Category	III	
Buffer <sup>1</sup>	75 feet	
Size	Approximately 41,745 square feet (0.96 acres)	
Cowardin Classes	Scrub-shrub	
HGM Class	Riverine	
Description Summary		
Vegetation	<p><b>Herbaceous:</b> Reed canary grass (<i>Phalaris arundinacea</i>), pathfinder (<i>Adenocaulon bicolor</i>), burr chervil (<i>Anthriscus caucalis</i>)</p> <p><b>Shrubs:</b> Russian olive (<i>Eleagnus angustifolia</i>), grey alder (<i>Alnus incana</i>)</p>	
Hydrology	<p><b>Indicators:</b> Site hydrology indicates that high spring flows in Amon Creek sustain high groundwater within the wetland</p> <p><b>Source:</b> Direct precipitation, high groundwater and occasional overbank flooding from Amon Creek</p>	

Notes:


<sup>1</sup> RMC Table 22.10.110(D) assuming a low level of impact from proposed change in land use and a moderate level of function for habitat.

### 2.3.2. Amon Creek (Wasteway)

The OHWM of Amon Creek, or the “wasteway”, was delineated in the field, within areas anticipated to be impacted by construction. The headwaters of Amon Creek are located southwest of the project site within residential areas. Amon Creek generally flows to the northeast through residential areas and drains to the Yakima River. Amon Creek flows through the project area at a low gradient and in a straightened channel. This stretch of stream is characterized by glide and pool habitat with dense vegetation on the banks providing over-water shade. Limited large woody material was observed within the stream. The banks of the stream are steep and incised, throughout the assessed reach, and the width of the channel varies from approximately 25 to 30 feet until it empties into the Yakima River.

Table 3 below summarizes information regarding the stream identified within the assessment area.

**TABLE 3. SUMMARY OF AMON CREEK CHARACTERISTICS**

Information		
Location	Between Columbia Park Trail and the Yakima River	
WRIA	37 – Lower Yakima	
Local Jurisdiction	City of Richland	
Stream Type <sup>1</sup>	F – Fish-bearing	
Average OHWM Channel Width	30 to 35 feet	
Connectivity	Flows northwest to Yakima River	
Description Summary		
Surrounding Vegetation	<b><u>Herbaceous:</u></b> Reed canary grass ( <i>Phalaris arundinacea</i> ), burr chervil ( <i>Anthriscus caucalis</i> ) <b><u>Shrub:</u></b> Russian olive ( <i>Eleagnus angustifolia</i> )	
Fish Use <sup>2</sup>	Coho Salmon ( <i>O. kisutch</i> ) – Documented Spawning Spring Chinook Salmon ( <i>O. tshawytscha</i> ) – Documented Presence	

Notes:

1 Per FPAMT (DNR 2022)

2 Per SWIFD (NWIFC 2022)


### 2.3.3. Yakima River

The OHWM of a small portion of the right bank of the Yakima River was delineated in the field, within areas anticipated to be impacted by construction. The headwaters of the Yakima River are located northwest of Richland on the eastern slopes of the Cascade Mountains. The Yakima River generally flows to the south and southeast through undeveloped forests, agricultural land, and multiple cities and towns including Cle Elum, Ellensburg and Yakima before draining to the Columbia River within Richland, Washington. The



banks of the Yakima River, adjacent to the project site, are steep and generally vegetated with Russian olive and reed canary grass with some black locust trees (*Robinia pseudoacacia*). Table 4 below summarizes information regarding the stream identified within the assessment area.

**TABLE 4. SUMMARY OF YAKIMA RIVER CHARACTERISTICS**

Information		
Location	Between Interstate-182 and State Route 240 in Richland	
WRIA	37 – Lower Yakima	
Local Jurisdiction	City of Richland	
Stream Type <sup>1</sup>	S – Shoreline	
Shoreline Designation	Natural	
Average OHWM Channel Width	Approximately 375 to 415 feet	
Connectivity	Flows east to Columbia River	
Description Summary		
Surrounding Vegetation	<b><u>Herbaceous:</u></b> Reed canary grass ( <i>Phalaris arundinacea</i> ), burr chervil ( <i>Anthriscus caucalis</i> ) <b><u>Shrub:</u></b> Russian olive ( <i>Eleagnus angustifolia</i> )	
Fish Use <sup>2</sup>	Brown Trout ( <i>Salmo trutta</i> ) – Presumed Presence Walleye ( <i>Sander vitreus</i> ) – Presumed Presence Dolly Varden/Bull Trout ( <i>Salvelinus malma</i> / <i>S. confluentus</i> ) – Documented Presence Mountain Whitefish ( <i>Prosopium williamsoni</i> ) – Documented Presence Largemouth Bass ( <i>Micropterus salmoides</i> ) – Documented Presence Summer Steelhead ( <i>Oncorhynchus mykiss</i> ) – Documented Presence Rainbow Trout ( <i>O. mykiss</i> ) – Documented Presence Coho Salmon ( <i>O. kisutch</i> ) – Documented Presence Spring Chinook Salmon ( <i>O. tshawytscha</i> ) – Documented Presence Fall Chinook Salmon ( <i>O. tshawytscha</i> ) – Documented Spawning Summer Chinook Salmon ( <i>O. tshawytscha</i> ) – Documented Spawning	

Notes:

1 Per FPAMT (DNR 2022)

2 Per SWIFD (NWIFC 2022)

### 3.0 SUMMARY

GeoEngineers conducted a wetland and stream OHWM delineation and assessment for the Lower Yakima River Coldwater Refugia Improvements Project. This report is intended to provide baseline wetlands and stream data in support of final design and permitting. One riverine wetland (Wetland A), a fish-bearing stream (Amon Creek) and a shoreline stream (Yakima River) were identified during the field investigation.

After project designs are finalized, potential wetland and stream impacts should be assessed and, if needed, avoidance, minimization and mitigation options should be evaluated. If potential wetland and/or stream impacts are identified, a mitigation plan and other development permits may be required.

### 4.0 LIMITATIONS

GeoEngineers has prepared this Critical Areas Assessment Report in general accordance with the scope and limitations of our proposal. Within the limitations of scope, schedule and budget, our services have been executed in accordance with the generally accepted practices for wetland delineation and stream OHWM delineation in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

This report has been prepared for the exclusive use of Northwest Hydraulic Consultants, Inc, authorized agents and regulatory agencies following the described methods and information available at the time of the work. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. The information contained herein should not be applied for any purpose or project except the one originally contemplated.

The applicant is advised to contact all appropriate regulatory agencies (local, state and federal) prior to design or construction of any development to obtain necessary permits and approvals.

### 5.0 REFERENCES

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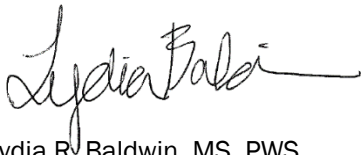
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Sincerely,  
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Biologist



Jason Scott, FP-C  
Associate Fisheries Biologist

LRB:RMTJS:cdb

Attachments:

Figure 1. Vicinity Map

Figure 2. Wetland and Stream Exhibit

Appendix A. Site Photographs

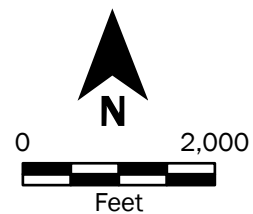
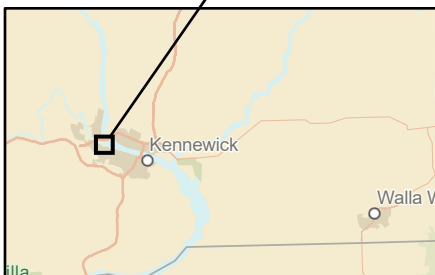
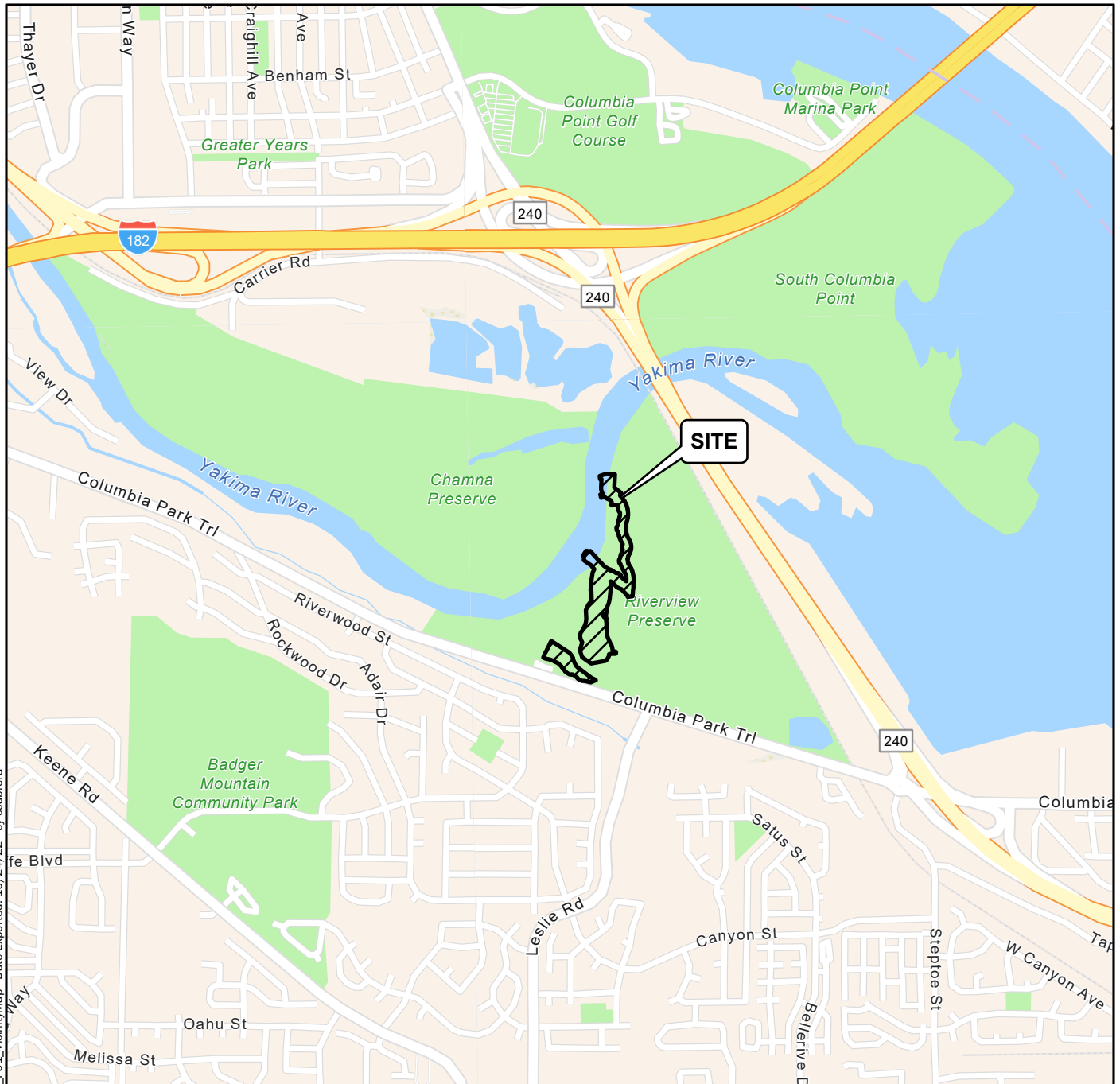
Appendix B. Background Data and Maps

Appendix C. Wetland Determination Datasheets

Appendix D. Wetland Rating Forms

One electronic copy submitted

Disclaimer: Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.



### Vicinity Map

Lower Yakima River Coldwater Refugia Improvements  
Richland, Washington



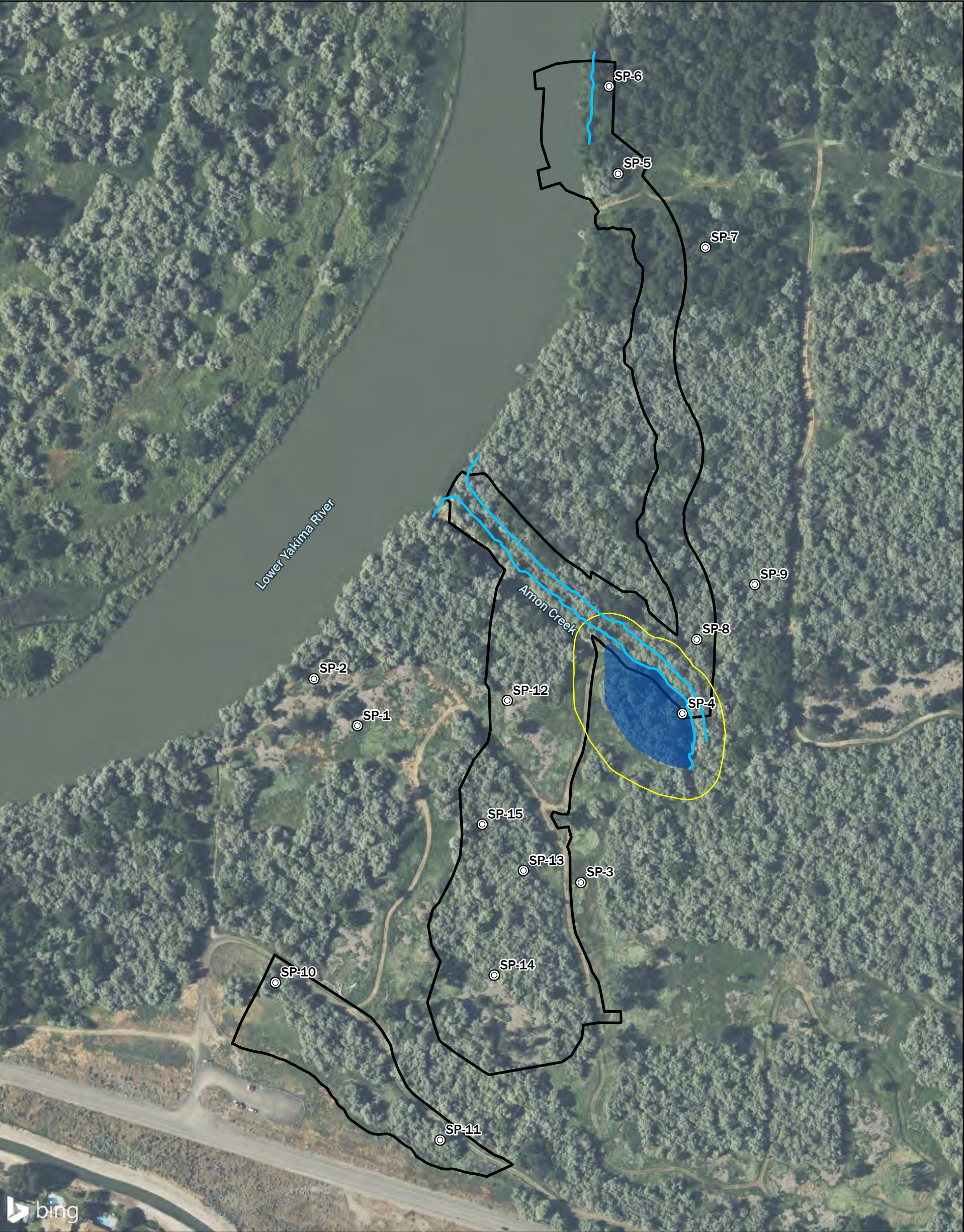
Figure 1

Source(s):  
• ESRI

Coordinate System: NAD 1983 StatePlane Washington South FIPS 4602 Feet

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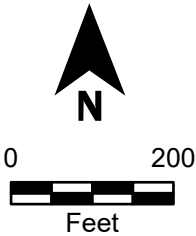




- Legend**
- Limits of Disturbance
  - Sample Point
  - Ordinary High Water Mark
  - Wetland
  - Wetland Buffer (75-ft)

Source(s):  
• Bing Imgaery

Coordinate System: NAD 1983 StatePlane Washington South FIPS 4602 Feet  
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Wetland and Stream Exhibit	
Lower Yakima River Coldwater Refugia Improvements Richland, Washington	
	Figure 2



## **APPENDIX A**

### **Site Photographs**



Photograph 1. Large portions of the site have been cleared of Russian olive.



Photograph 2. The site is characterized primarily by grassy uplands and stands of Russian olive.

Site Photographs	
Lower Yakima River Coldwater Refugia Improvements Richland, Washington	
	<b>Appendix A-1</b>





Photograph 3. Looking at Wetland A which is vegetated with reed canary grass and Russian olive.



Photograph 4. Amon Creek has steep densely vegetated banks.

Site Photographs	
Lower Yakima River Coldwater Refugia Improvements Richland, Washington	
	<b>Appendix A-2</b>





Photograph 5. Looking at where Amon Creek flows into the Yakima River.



Photograph 6. Looking at the banks of the Yakima River near the proposed new outfall of Amon Creek.

## Site Photographs

Lower Yakima River Coldwater Refugia Improvements  
Richland, Washington



Appendix  
A-3





Photograph 7. Sample plot SP-10 in upland area on the southern portion of the site



Photograph 8. Sample Plot SP-12 placed in depressional area intended for excess spoils placement.

## Site Photographs

Lower Yakima River Coldwater Refugia Improvements  
Richland, Washington



Appendix  
A-4





Photograph 9. Sample plot SP-14 in upland area of the site



Photograph 10. Sample Plot SP-15 in a Russian Olive thicket at the site

### Site Photographs

Lower Yakima River Coldwater Refugia Improvements  
Richland, Washington



Appendix  
A-5





Photograph 11. Upland area of proposed fill at the site. Sample plots SP-10 and SP-11 were placed within this area.



Photograph 12. Upland area of proposed fill at the site. Sample plots SP-13, SP-14 and SP-15 were placed within this area.

### Site Photographs

Lower Yakima River Coldwater Refugia Improvements  
Richland, Washington



Appendix  
A-6





Photograph 13. Approximate location of SP-7, dominated by a mulberry overstory and bedstraw in the understory.



Photograph 14. Area near SP-12 dominated by thick stands of tumbling pigweed at the site.

## Site Photographs

Lower Yakima River Coldwater Refugia Improvements  
Richland, Washington



Appendix  
A-7

## **APPENDIX B**









### **Background Data and Maps**





May 18, 2022

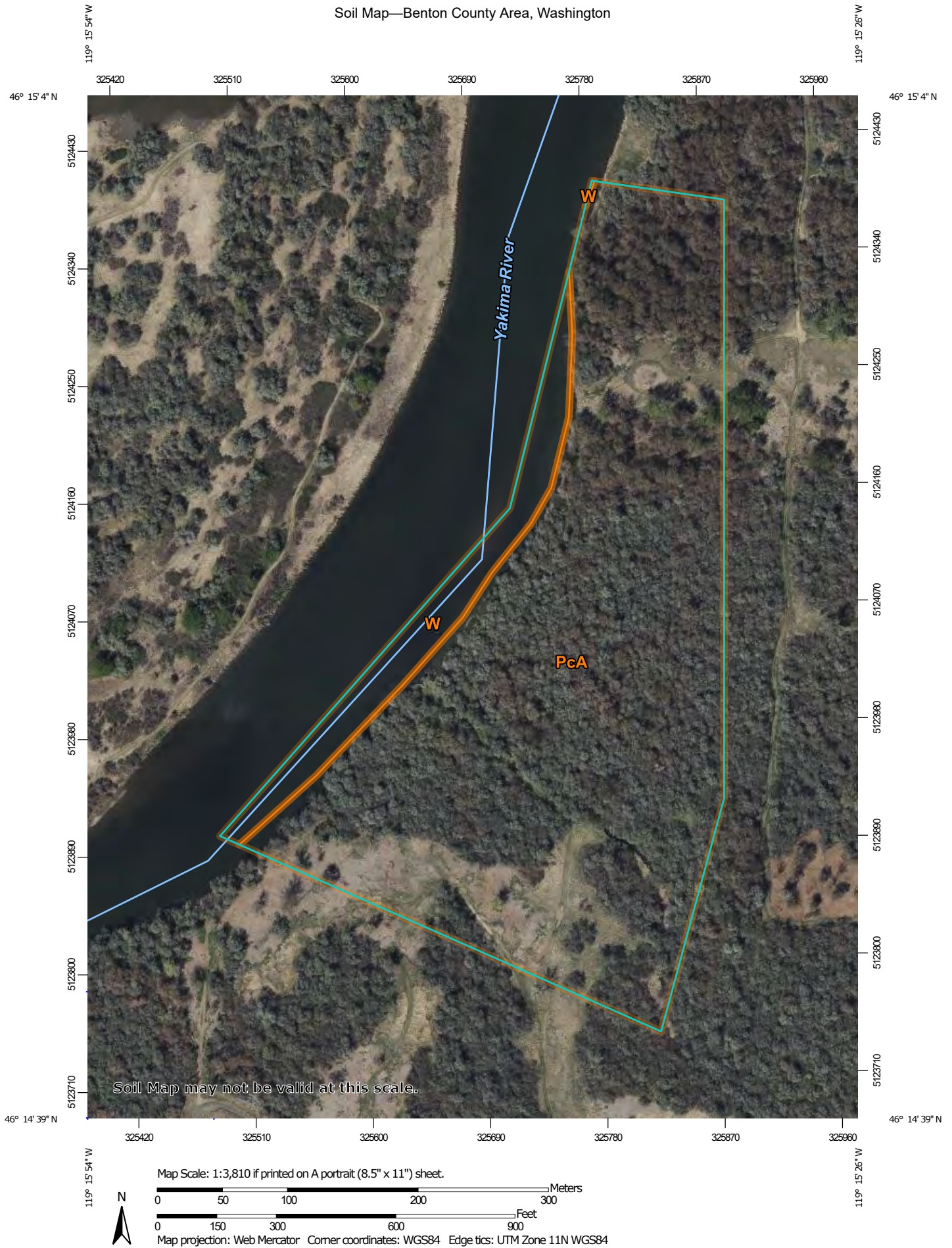
Wetlands

- |  |   |  |
|--|---|--|
|  Estuarine and Marine Deepwater |  Freshwater Emergent Wetland       |  Lake     |
|  Estuarine and Marine Wetland   |  Freshwater Forested/Shrub Wetland |  Other    |
|  |  Freshwater Pond                   |  Riverine |

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



Soil Map—Benton County Area, Washington





## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

### Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

### Water Features



Streams and Canals

### Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

### Background



Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Benton County Area, Washington

Survey Area Data: Version 17, Aug 23, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 16, 2021—Apr 17, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
PcA	Pasco silt loam, 0 to 2 percent slopes	29.3	90.9%
W	Water	2.9	9.1%
<b>Totals for Area of Interest</b>		<b>32.2</b>	<b>100.0%</b>

## Benton County Area, Washington

### PcA—Pasco silt loam, 0 to 2 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2bcx

*Elevation:* 250 to 700 feet

*Mean annual precipitation:* 6 to 10 inches

*Mean annual air temperature:* 52 to 55 degrees F

*Frost-free period:* 136 to 190 days

*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Pasco and similar soils:* 90 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Pasco

##### Setting

*Landform:* Flood plains

*Parent material:* Alluvium

##### Typical profile

*H1 - 0 to 6 inches:* silt loam

*H2 - 6 to 60 inches:* silt loam

##### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Poorly drained

*Capacity of the most limiting layer to transmit water*

*(Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* About 24 to 36 inches

*Frequency of flooding:* NoneOccasional

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 5 percent

*Maximum salinity:* Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)

*Sodium adsorption ratio, maximum:* 10.0

*Available water supply, 0 to 60 inches:* High (about 10.2 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 3w

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* C

*Ecological site:* R007XY402WA - LOAMY BOTTOM 6-10 PZ

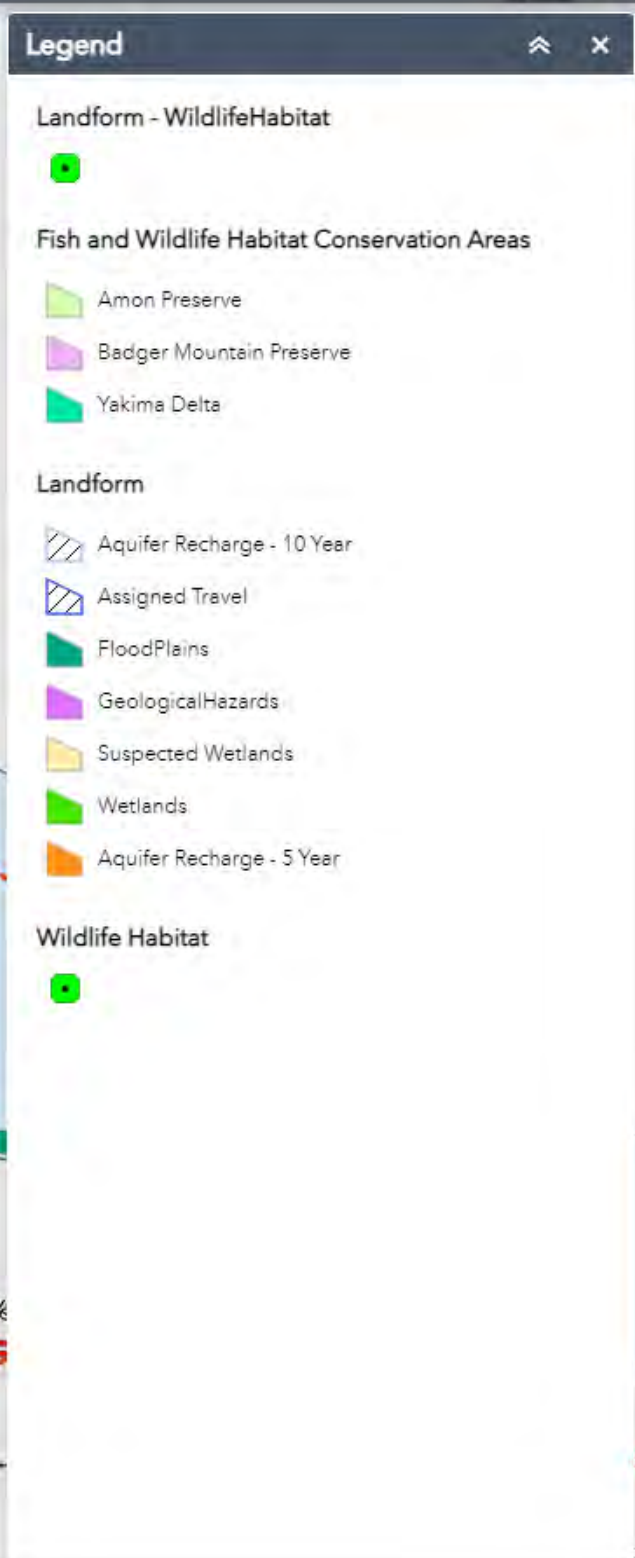
*Hydric soil rating:* No

## Data Source Information

Soil Survey Area: Benton County Area, Washington

Survey Area Data: Version 17, Aug 23, 2021







Data Active (4) Legend

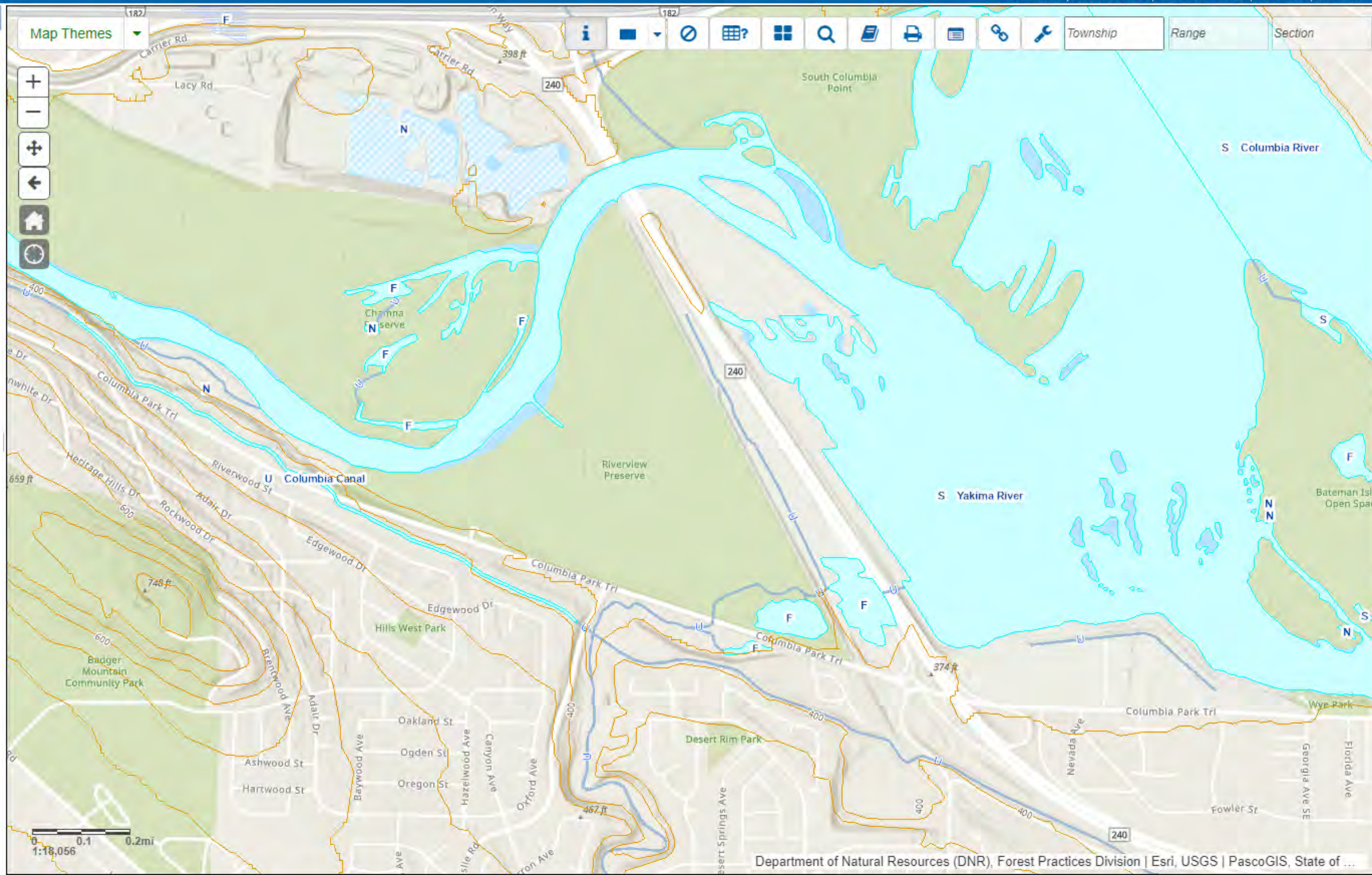
40-foot Contours  
40 ft. Contours

Water Bodies (FP)  
Water Bodies (FP)

- Other Impoundments
- Open Freshwater
- Subject to Inundation
- Glacier / Snowfield
- Wet Area
- Open Saltwater
- Artificial Feature

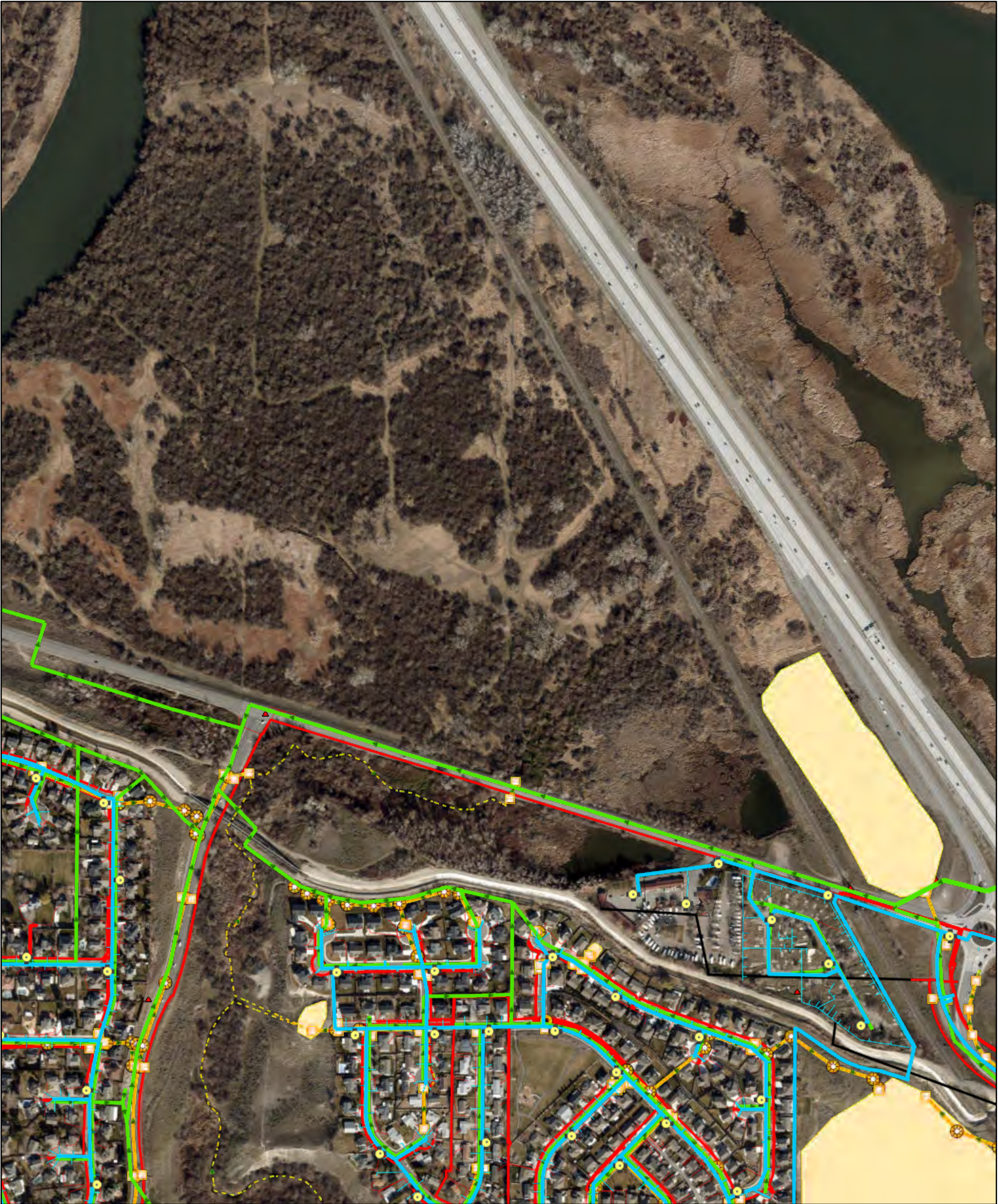
Water Courses (FP)  
Water Courses (FP)

- Type S
- Type F
- Type N, Np, Ns
- U, unknown
- X, non-typed per WAC 222-16

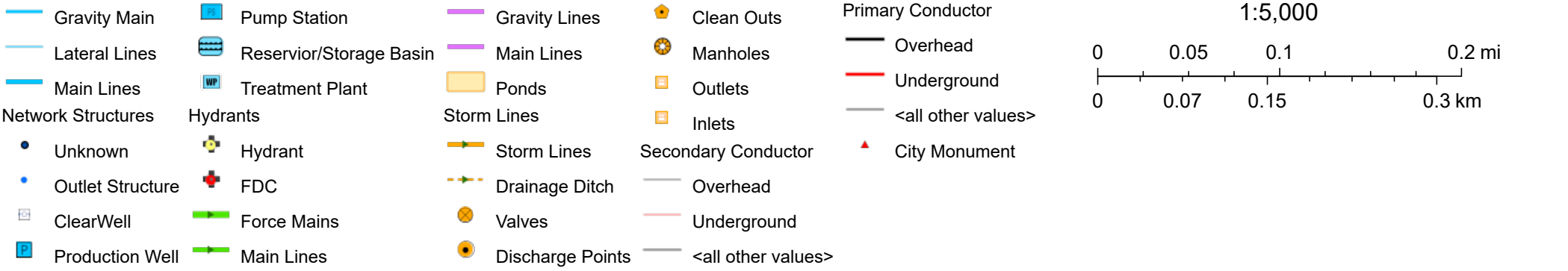




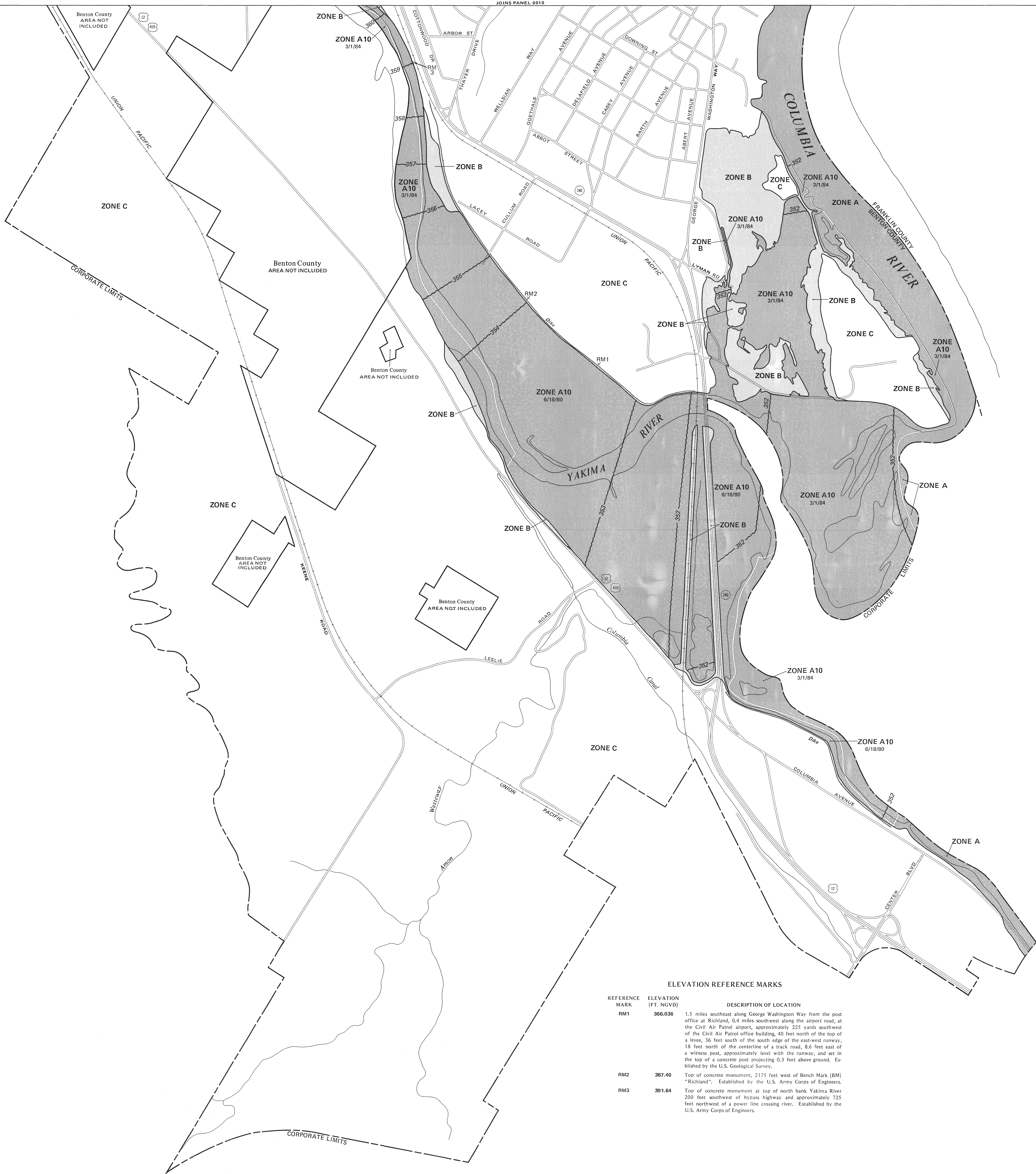
# ArcGIS Web AppBuilder



5/18/2022, 12:14:04 PM







**KEY TO MAP**

500-Year Flood Boundary  
100-Year Flood Boundary  
Zone Designations\* With Date of Identification e.g., 12/2/74  
100-Year Flood Boundary  
500-Year Flood Boundary  
Base Flood Elevation Line With Elevation In Feet\*\*  
Base Flood Elevation in Feet Where Uniform Within Zone\*\*  
Elevation Reference Mark  
Zone D Boundary  
River Mile  
River Mile

ZONE B  
ZONE A1 DATE  
ZONE A5 DATE  
ZONE B  
513  
(EL 987)  
RM7X  
M1.5

\*\*Referenced to the National Geodetic Vertical Datum of 1929

**\*EXPLANATION OF ZONE DESIGNATIONS**

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

**NOTES TO USER**

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

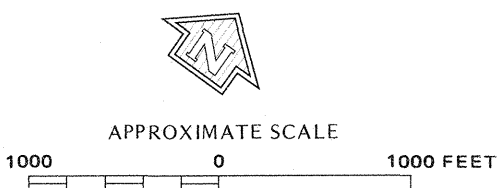
**INITIAL IDENTIFICATION:**  
MARCH 30, 1970

**FLOOD HAZARD BOUNDARY MAP REVISIONS:**

**FLOOD INSURANCE RATE MAP EFFECTIVE:**  
MARCH 30, 1970

**FLOOD INSURANCE RATE MAP REVISIONS:**  
Map revised May 28, 1971, to add special flood hazard areas.  
Map revised July 2, 1971, to clarify insurance eligibility dates.  
Map revised July 1, 1974, to change zone designations.  
Map revised November 14, 1975, to reflect curvilinear flood boundary and to add special flood hazard areas.  
Map revised June 18, 1980, to change zone designations, flood boundaries and base flood elevations.  
Map revised March 1, 1984, to change flood boundaries and corporate limits, and to add special flood hazard areas.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.



**ELEVATION REFERENCE MARKS**

REFERENCE MARK	ELEVATION (FT. NGVD)	DESCRIPTION OF LOCATION
RM1	366.036	1.5 miles southeast along George Washington Way from the post office at Richland, 0.4 miles southwest along the airport road, at the Civil Air Patrol airport, approximately 225 yards southwest of the Civil Air Patrol office building, 40 feet north of the top of a levee, 36 feet south of the south edge of the east-west runway, 18 feet north of the centerline of a track road, 8.6 feet east of a witness post, approximately level with the runway, and set in the top of a concrete post projecting 0.3 feet above ground. Established by the U.S. Geological Survey.
RM2	367.40	Top of concrete monument, 2175 feet west of Bench Mark (BM) "Richland". Established by the U.S. Army Corps of Engineers.
RM3	391.64	Top of concrete monument at top of north bank Yakima River 200 feet southwest of bypass highway and approximately 725 feet northwest of a power line crossing river. Established by the U.S. Army Corps of Engineers.

**NATIONAL FLOOD INSURANCE PROGRAM**

**FIRM  
FLOOD INSURANCE RATE MAP**

**CITY OF  
RICHLAND,  
WASHINGTON  
BENTON COUNTY**

**PANEL 15 OF 15  
(SEE MAP INDEX FOR PANELS NOT PRINTED)**

**COMMUNITY-PANEL NUMBER  
535533 0015 E**

**MAP REVISED:  
MARCH 1, 1984**



Federal Emergency Management Agency





### Legend

#### Other Fish Species (Dist)

Walleye

- Documented Presence
- Presumed Presence (All Types)





## Legend

### Other Fish Species (Dist)

- Brown Trout
  - Documented Presence
  - Presumed Presence (All Types)





### Legend

#### Other Fish Species (Dist)

- Native Char\Dolly Varden\Bull Trout
- Documented Presence
- Documented Spawning
- Documented Rearing
- Presumed Presence (All Types)
- Gradient Accessible, Presence
- Potential Presence (All Types)
- Document Historic Presence (All Types)
- Transported Presence
- Transported Spawning
- Transported Rearing

PascoGIS, Bureau of Land Management, State of Oregon, State of Ore.





Legend

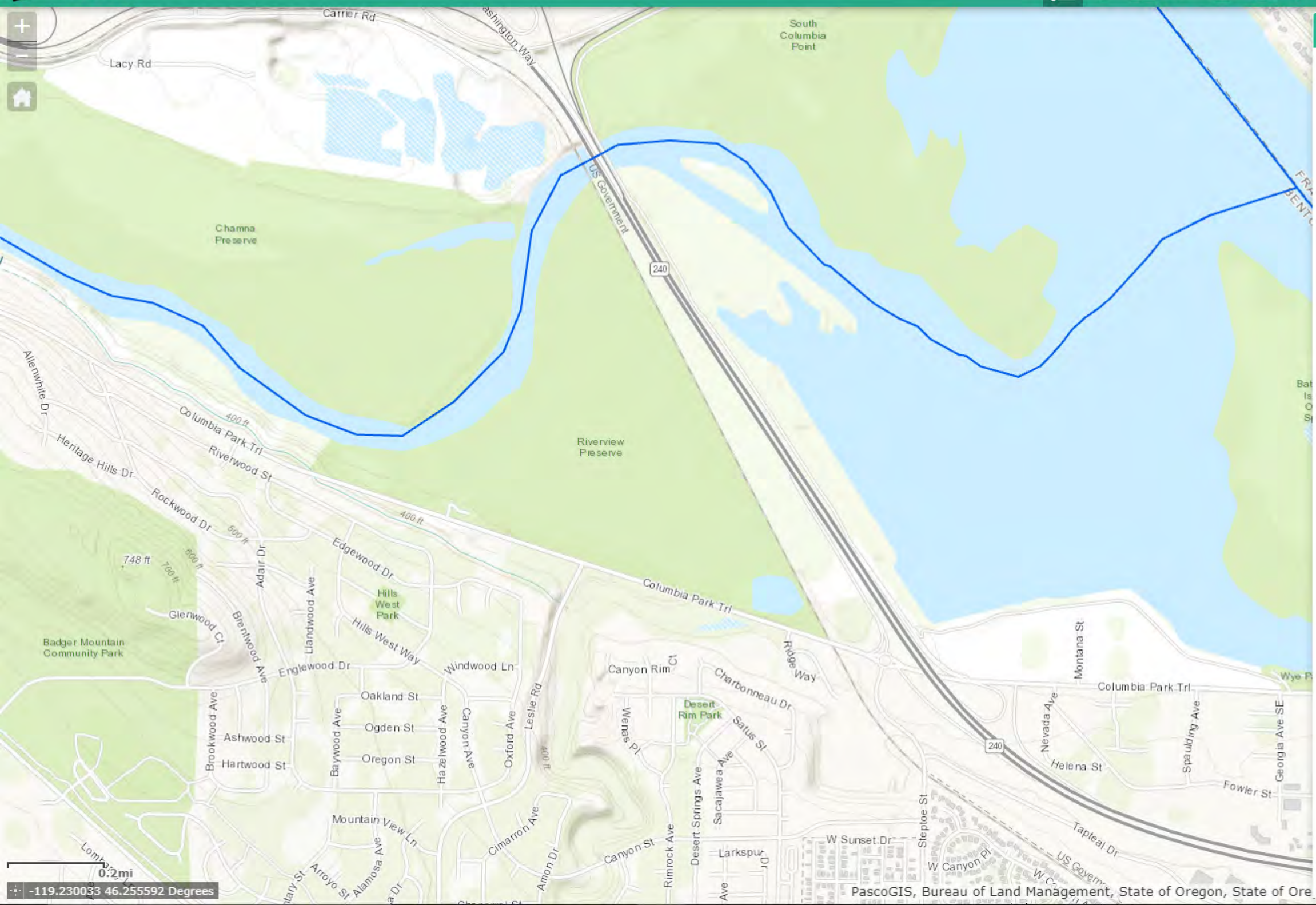
Other Fish Species (Dist)

Mountain Whitefish

Documented Presence

Presumed Presence (All Types)





Legend

Other Fish Species (Dist)

- Largemouth Bass
  - Documented Presence
  - Documented Spawning
  - Presumed Presence (All Types)





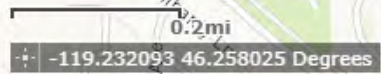
## Legend

## Salmon and Steelhead (Dist)

## Summer Steelhead

- Documented Presence
- Documented Spawning
- Documented Rearing
- Presumed Presence (All Types)
- Potential Presence (All Types)
- Document Historic Presence (All Types)
- Transported Presence
- Artificial Presence
- Artificial Spawning
- Artificial Rearing





## Rainbow

- Documented Presence
- Presumed Presence (All Types)
- Potential Presence (All Types)
- Document Historic Presence (All Types)





## Legend

## Salmon and Steelhead (Dist)

## Coho

- Documented Presence
- Documented Spawning
- Documented Rearing
- Presumed Presence (All Types)
- Gradient Accessible, Presence
- Potential Presence (All Types)
- Document Historic Presence (All Types)
- Transported Presence
- Transported Spawning
- Transported Rearing
- Artificial Presence
- Artificial Spawning
- Artificial Rearing





### Legend

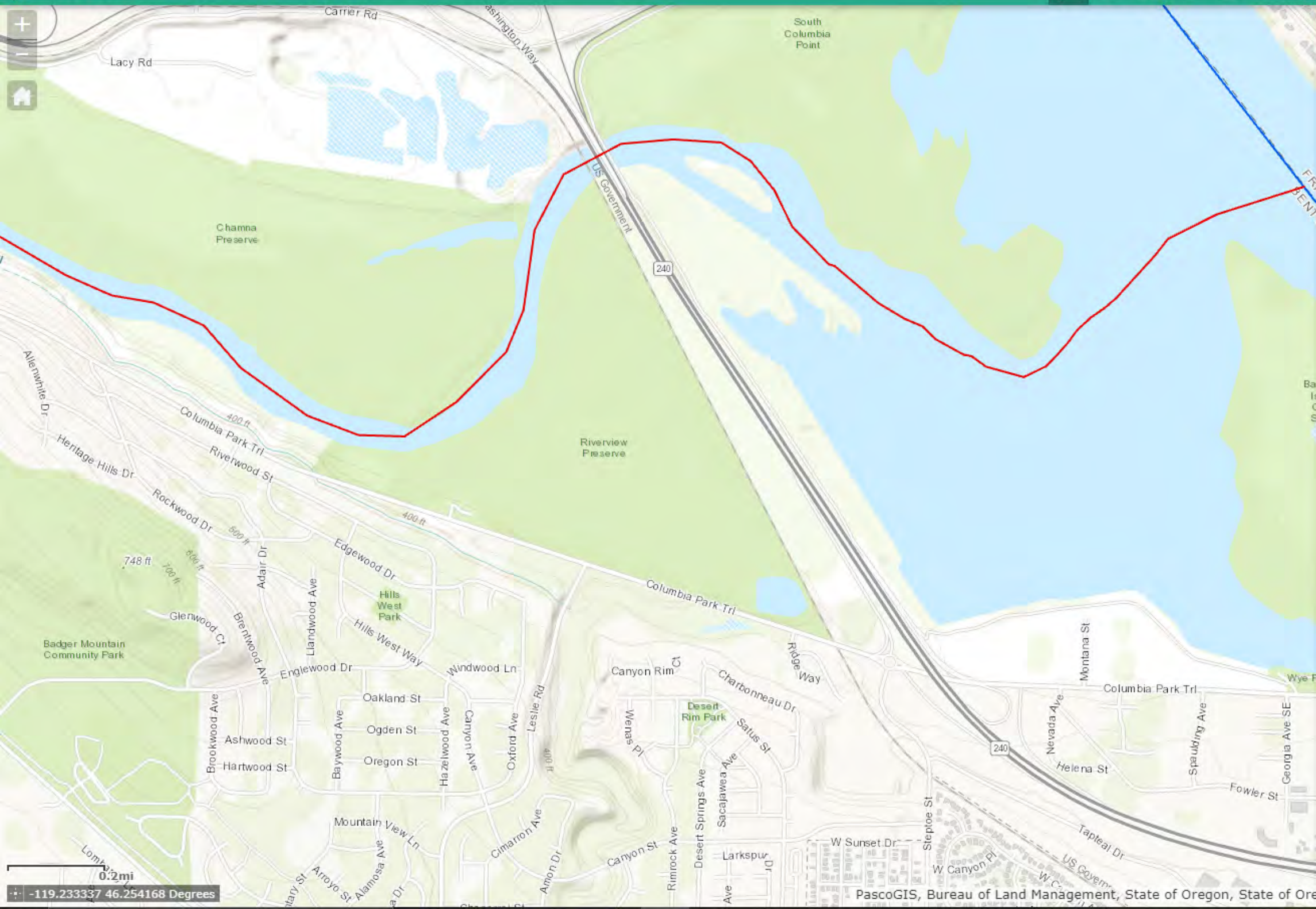
#### Salmon and Steelhead (Dist)

Fall Chinook

- Documented Presence
- Documented Spawning
- Documented Rearing
- Presumed Presence (All Types)
- Gradient Accessible, Presence
- Potential Presence (All Types)
- Document Historic Presence (All Types)
- Transported Presence
- Transported Spawning
- Artificial Presence
- Artificial Spawning

PascoGIS, Bureau of Land Management, State of Oregon, State of Ore





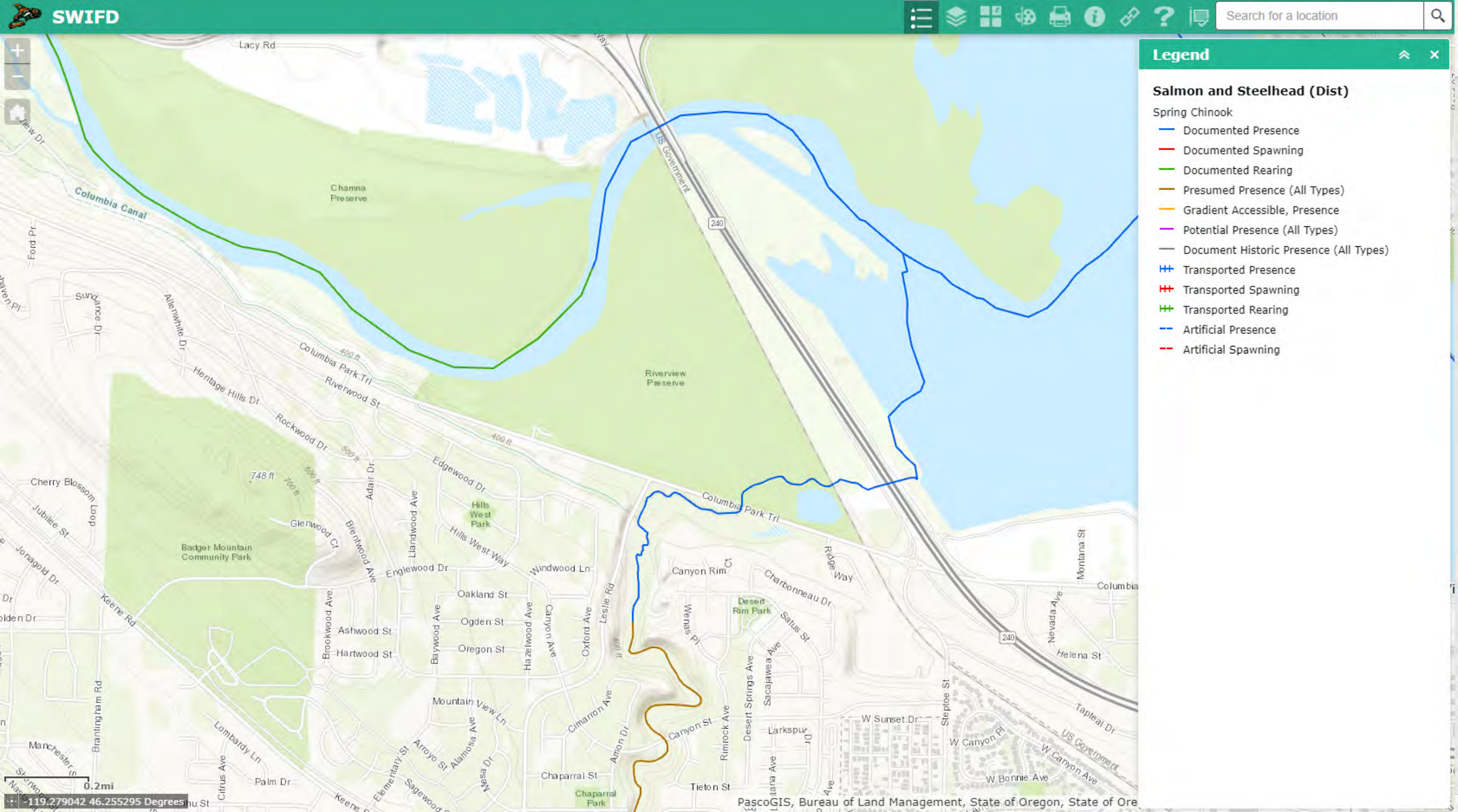
## Legend

## Salmon and Steelhead (Dist)

## Summer Chinook

- Documented Presence
- Documented Spawning
- Documented Rearing
- Presumed Presence (All Types)
- Gradient Accessible, Presence
- Potential: Blocked (All Types)
- Historic - Documented, Presence

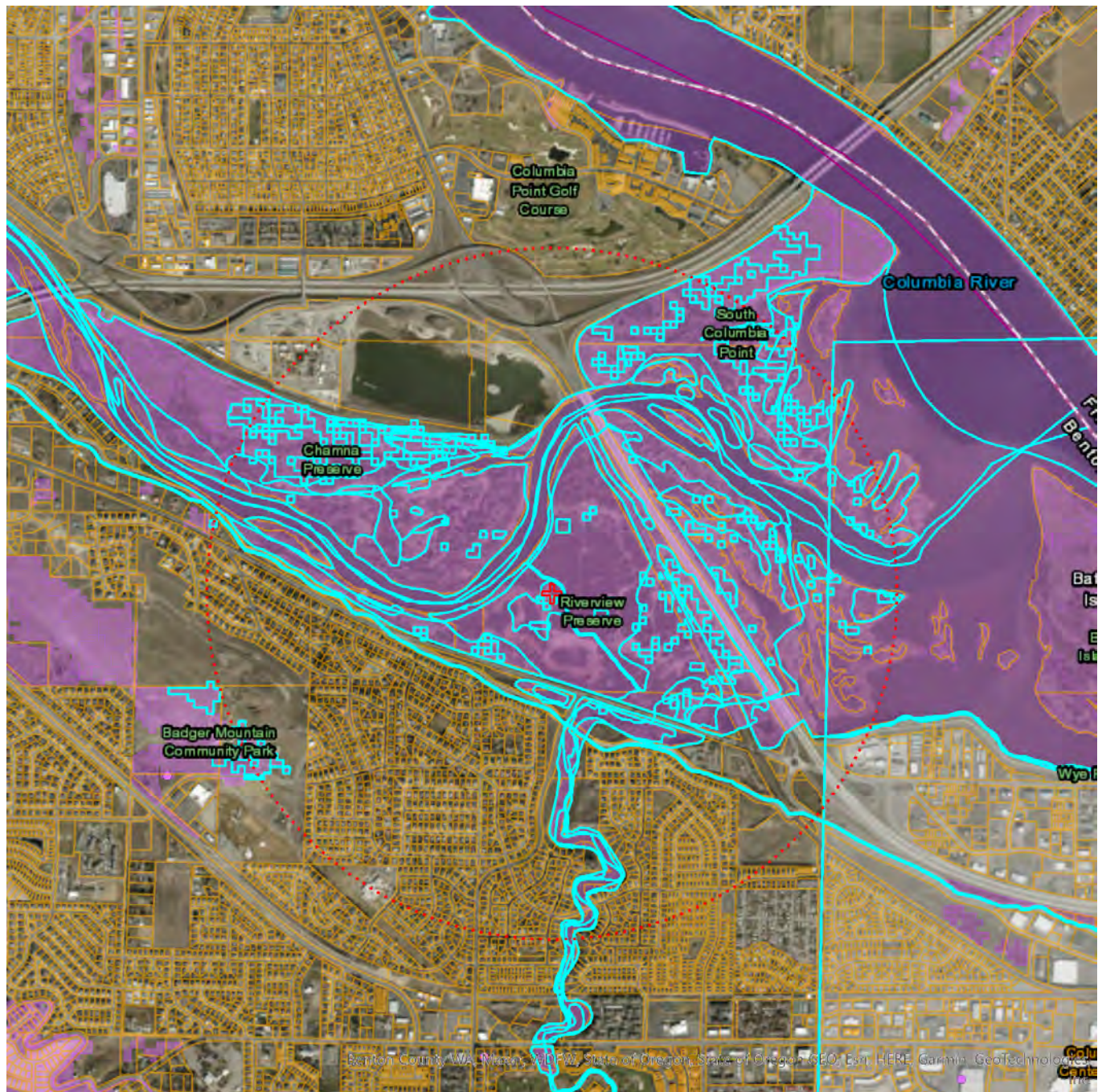








## Priority Habitats and Species on the Web



Buffer radius: 1 Miles

Report Date: 05/18/2022

PHS Species/Habitats Overview:



Occurrence Name	Federal Status	State Status	Sensitive Location
Chinook	Not Warranted	N/A	No
Steelhead	Threatened	N/A	No
Summer Steelhead	N/A	N/A	No
Fall Chinook	N/A	N/A	No
Spring Chinook	N/A	N/A	No
Coho	N/A	N/A	No
Summer Chinook	N/A	N/A	No
Rainbow Trout	N/A	N/A	No
Dolly Varden/ Bull Trout	N/A	N/A	No
Waterfowl Concentrations	N/A	N/A	No
Wetlands	N/A	N/A	No
Biodiversity Areas And Corridor	N/A	N/A	No
Black-crowned night-heron	N/A	N/A	No
Freshwater Emergent Wetland	N/A	N/A	No
Freshwater Forested/Shrub Wetland	N/A	N/A	No
Riverine	N/A	N/A	No
Shrub-steppe	N/A	N/A	No
Eastside Steppe	N/A	N/A	No
Townsend's Ground Squirrel - townsendii	N/A	Candidate	Yes

## PHS Species/Habitats Details:

Chinook	
Scientific Name	<i>Oncorhynchus tshawytscha</i>
Priority Area	Occurrence
Site Name	Yakima River
Accuracy	NA
Notes	LLID: 1192269462537, Stock Name: Marion Drain Fall Chinook, Run: Fall, Status: Healthy
Source Record	1744
Source Dataset	SASI
Source Name	Not Given
Source Entity	WDFW Fish Program
Federal Status	Not Warranted
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines



Steelhead	
Scientific Name	<i>Oncorhynchus mykiss</i>
Priority Area	Occurrence
Site Name	Yakima River
Accuracy	NA
Notes	LLID: 1192269462537, Stock Name: Toppenish Creek Summer Steelhead, Run: Summer, Status: Unknown
Source Record	6890
Source Dataset	SASI
Source Name	Not Given
Source Entity	WDFW Fish Program
Federal Status	Threatened
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Summer Steelhead	
Scientific Name	<i>Oncorhynchus mykiss</i>
Priority Area	Occurrence/Migration
Site Name	Yakima River
Accuracy	NA
Notes	LLID: 1192269462537, Fish Name: Steelhead Trout, Run Time: Summer, Life History: Anadromous
Source Record	2565
Source Dataset	SWIFD
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Fall Chinook	
Scientific Name	<i>Oncorhynchus tshawytscha</i>
Priority Area	Occurrence/Migration
Site Name	Amon Wasteway
Accuracy	NA
Notes	LLID: 1192553462195, Fish Name: Chinook Salmon, Run Time: Fall, Life History: Anadromous
Source Record	2590
Source Dataset	SWIFD
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Spring Chinook	
Scientific Name	<i>Oncorhynchus tshawytscha</i>
Priority Area	Breeding Area
Site Name	Yakima River
Accuracy	NA
Notes	LLID: 1192269462537, Fish Name: Chinook Salmon, Run Time: Spring, Life History: Anadromous
Source Record	2551
Source Dataset	SWIFD
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines



Coho	
Scientific Name	<i>Oncorhynchus kisutch</i>
Priority Area	Occurrence/Migration
Site Name	Yakima River
Accuracy	NA
Notes	LLID: 1192269462537, Fish Name: Coho Salmon, Run Time: Unknown or not Applicable, Life History: Anadromous
Source Record	2555
Source Dataset	SWIFD
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Fall Chinook	
Scientific Name	<i>Oncorhynchus tshawytscha</i>
Priority Area	Breeding Area
Site Name	Yakima River
Accuracy	NA
Notes	LLID: 1192269462537, Fish Name: Chinook Salmon, Run Time: Fall, Life History: Anadromous
Source Record	2548
Source Dataset	SWIFD
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Chinook	
Scientific Name	<i>Oncorhynchus tshawytscha</i>
Priority Area	Occurrence
Site Name	Yakima River
Accuracy	NA
Notes	LLID: 1192269462537, Stock Name: Naches Spring Chinook, Run: Spring, Status: Depressed
Source Record	1752
Source Dataset	SASI
Source Name	Not Given
Source Entity	WDFW Fish Program
Federal Status	Not Warranted
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Steelhead	
Scientific Name	<i>Oncorhynchus mykiss</i>
Priority Area	Occurrence
Site Name	Yakima River
Accuracy	NA
Notes	LLID: 1192269462537, Stock Name: Naches Summer Steelhead, Run: Summer, Status: Unknown
Source Record	6892
Source Dataset	SASI
Source Name	Not Given
Source Entity	WDFW Fish Program
Federal Status	Threatened
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines



Chinook	
Scientific Name	<i>Oncorhynchus tshawytscha</i>
Priority Area	Occurrence
Site Name	Yakima River
Accuracy	NA
Notes	LLID: 1192269462537, Stock Name: Yakima River Bright Fall Chinook, Run: Fall, Status: Healthy
Source Record	1728
Source Dataset	SASI
Source Name	Not Given
Source Entity	WDFW Fish Program
Federal Status	Not Warranted
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Spring Chinook	
Scientific Name	<i>Oncorhynchus tshawytscha</i>
Priority Area	Occurrence/Migration
Site Name	Yakima River
Accuracy	NA
Notes	LLID: 1192269462537, Fish Name: Chinook Salmon, Run Time: Spring, Life History: Anadromous
Source Record	2549
Source Dataset	SWIFD
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Chinook	
Scientific Name	<i>Oncorhynchus tshawytscha</i>
Priority Area	Occurrence
Site Name	Yakima River
Accuracy	NA
Notes	LLID: 1192269462537, Stock Name: American River Spring Chinook, Run: Spring, Status: Depressed
Source Record	1760
Source Dataset	SASI
Source Name	Not Given
Source Entity	WDFW Fish Program
Federal Status	Not Warranted
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Steelhead	
Scientific Name	<i>Oncorhynchus mykiss</i>
Priority Area	Occurrence
Site Name	Yakima River
Accuracy	NA
Notes	LLID: 1192269462537, Stock Name: Upper Yakima Summer Steelhead, Run: Summer, Status: Unknown
Source Record	6894
Source Dataset	SASI
Source Name	Not Given
Source Entity	WDFW Fish Program
Federal Status	Threatened
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines



Summer Chinook	
Scientific Name	<i>Oncorhynchus tshawytscha</i>
Priority Area	Breeding Area
Site Name	Yakima River
Accuracy	NA
Notes	LLID: 1192269462537, Fish Name: Chinook Salmon, Run Time: Summer, Life History: Anadromous
Source Record	2553
Source Dataset	SWIFD
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Steelhead	
Scientific Name	<i>Oncorhynchus mykiss</i>
Priority Area	Occurrence
Site Name	Yakima River
Accuracy	NA
Notes	LLID: 1192269462537, Stock Name: Satus Creek Summer Steelhead, Run: Summer, Status: Unknown
Source Record	6888
Source Dataset	SASI
Source Name	Not Given
Source Entity	WDFW Fish Program
Federal Status	Threatened
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Chinook	
Scientific Name	<i>Oncorhynchus tshawytscha</i>
Priority Area	Occurrence
Site Name	Yakima River
Accuracy	NA
Notes	LLID: 1192269462537, Stock Name: Upper Yakima River Spring Chinook, Run: Spring, Status: Depressed
Source Record	1747
Source Dataset	SASI
Source Name	Not Given
Source Entity	WDFW Fish Program
Federal Status	Not Warranted
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Spring Chinook	
Scientific Name	<i>Oncorhynchus tshawytscha</i>
Priority Area	Occurrence/Migration
Site Name	Amon Wasteway
Accuracy	NA
Notes	LLID: 1192553462195, Fish Name: Chinook Salmon, Run Time: Spring, Life History: Anadromous
Source Record	2592
Source Dataset	SWIFD
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines



Rainbow Trout	
Scientific Name	<i>Oncorhynchus mykiss</i>
Priority Area	Occurrence/Migration
Site Name	Yakima River
Accuracy	NA
Notes	LLID: 1192269462537, Fish Name: Rainbow Trout, Run Time: Unknown or not Applicable, Life History: Resident
Source Record	2563
Source Dataset	SWIFD
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Dolly Varden/ Bull Trout	
Scientific Name	<i>Salvelinus malma/S. confluentus</i>
Priority Area	Occurrence/Migration
Site Name	Yakima River
Accuracy	NA
Notes	LLID: 1192269462537, Fish Name: Bull Trout, Run Time: Unknown or not Applicable, Life History: Unknown
Source Record	2556
Source Dataset	SWIFD
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Spring Chinook	
Scientific Name	<i>Oncorhynchus tshawytscha</i>
Priority Area	Occurrence/Migration
Site Name	Amon Wasteway
Accuracy	NA
Notes	LLID: 1192553462195, Fish Name: Chinook Salmon, Run Time: Spring, Life History: Anadromous
Source Record	2591
Source Dataset	SWIFD
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Coho	
Scientific Name	<i>Oncorhynchus kisutch</i>
Priority Area	Breeding Area
Site Name	Amon Wasteway
Accuracy	NA
Notes	LLID: 1192553462195, Fish Name: Coho Salmon, Run Time: Unknown or not Applicable, Life History: Anadromous
Source Record	2593
Source Dataset	SWIFD
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines



Waterfowl Concentrations	
Priority Area	Regular Concentration
Site Name	COLUMBIA PARK
Notes	WINTERING WATERFOWL CONCENTRATIONS OF DABBLING DUCK +/-10000 MOSTLY MALLARD +/- 40000 CANADA GEESE, ALSO UTILIZED BY CANVASBACK, RINGNECKS ONE OF THE BETT AREA FOR WOOD DUCKS
Source Record	901237
Source Dataset	PHSREGION
Source Name	PARKER, RICHARD
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://wdfw.wa.gov/publications/pub.php?id=00026">http://wdfw.wa.gov/publications/pub.php?id=00026</a>
Geometry Type	Polygons

Wetlands	
Priority Area	Aquatic Habitat
Site Name	AMON CREEK
Accuracy	1/4 mile (Quarter Section)
Notes	RIVERINE WETLANDS THROUGHOUT THE WEST FORK AND MIDDLE FORK AMON CREEK.
Source Record	913566
Source Dataset	PHSREGION
Source Name	LARIVIERE, PAUL WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Biodiversity Areas And Corridor	
Priority Area	Terrestrial Habitat
Site Name	YAKIMA RIVER DELTA
Accuracy	1/4 mile (Quarter Section)
Notes	BIODIVERSITY CORRIDOR. AREA OF MIXED RIPARIAN, WETLAND, AND SHRUB-STEPPE. USED AS MIGRATION CORRIDOR BY MULE DEER. BALD EAGLE FORAGING. IMPORTANT SHOREBIRD MIGRATION AREA AND WATERFOWL WINTERING.
Source Record	920208
Source Dataset	PHSREGION
Source Name	NEWSOME, HEIDI USFWS
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://wdfw.wa.gov/publications/pub.php?id=00023">http://wdfw.wa.gov/publications/pub.php?id=00023</a>
Geometry Type	Polygons

Biodiversity Areas And Corridor	
Priority Area	Terrestrial Habitat
Site Name	AMON CREEK
Accuracy	1/4 mile (Quarter Section)
Notes	BIODIVERSITY AREA INCLUDES CREEK, WETLANDS, AND SHRUB STEPPE.
Source Record	920495
Source Dataset	PHSREGION
Source Name	RITTER, MICHAEL WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://wdfw.wa.gov/publications/pub.php?id=00023">http://wdfw.wa.gov/publications/pub.php?id=00023</a>
Geometry Type	Polygons



Black-crowned night-heron	
Scientific Name	<i>Nycticorax nycticorax</i>
Priority Area	Breeding Area
Accuracy	Standard buffer
Notes	BLACK-CROWNED NIGHT HERON ROOKERY YAKIMA RIVER DELTA.
Source Record	1404
Source Dataset	WS_OccurPolygon
Source Date	WS_OccurPolygon
Source Name	BERNATOWICZ, J/WDFW;LIVINGSTON
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://wdfw.wa.gov/publications/pub.php?id=00026">http://wdfw.wa.gov/publications/pub.php?id=00026</a>
Geometry Type	Polygons

Freshwater Emergent Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Emergent Wetland - NWI Code: PEM1/FO1A
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PFO1A
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PFO1A
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons



Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PFO1A
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS/EM1Ch
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS/EM1Ch
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS/EM1Ch
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons



Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS/EM1Ch
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS/EM1Ch
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS/EM1Ch
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS/EM1Ch
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons



Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS/EM1Ch
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS/EM1Ch
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS/EM1Ch
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PFO1Ch
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons



Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PFO1C
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Riverine	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Riverine - NWI Code: R4SBCx
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Emergent Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Emergent Wetland - NWI Code: PEM1/SS1C
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PFO1C
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons



Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PFO1C
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PFO1C
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PFO1/SS1C
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PFO1/SS1Ch
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons



Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PFO1/SS1Ch
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Emergent Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Emergent Wetland - NWI Code: PEM1F
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Emergent Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Emergent Wetland - NWI Code: PEM1F
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Emergent Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Emergent Wetland - NWI Code: PEM1F
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons



Freshwater Emergent Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Emergent Wetland - NWI Code: PEM1Cd
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS/EM1Fh
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS/EM1Fh
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS/EM1Fh
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons



Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS1C
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS1C
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS1C
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Emergent Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Emergent Wetland - NWI Code: PEM1C
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons



Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal ShrublandState Conservation Rank: Not Ranked. ESOC: Not Ranked.# SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal ShrublandState Conservation Rank: Not Ranked. ESOC: Not Ranked.# SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal ShrublandState Conservation Rank: Not Ranked. ESOC: Not Ranked.# SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal ShrublandState Conservation Rank: Not Ranked. ESOC: Not Ranked.# SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal ShrublandState Conservation Rank: Not Ranked. ESOC: Not Ranked.# SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal ShrublandState Conservation Rank: Not Ranked. ESOC: Not Ranked.# SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons



Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal ShrublandState Conservation Rank: Not Ranked. ESOC: Not Ranked.# SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal ShrublandState Conservation Rank: Not Ranked. ESOC: Not Ranked.# SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal ShrublandState Conservation Rank: Not Ranked. ESOC: Not Ranked.# SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal ShrublandState Conservation Rank: Not Ranked. ESOC: Not Ranked.# SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons



Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS1Cd
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons



Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS1Ch
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS1Ch
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSS1Ch
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal ShrublandState Conservation Rank: Not Ranked. ESOC: Not Ranked.# SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal ShrublandState Conservation Rank: Not Ranked. ESOC: Not Ranked.# SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons



Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal ShrublandState Conservation Rank: Not Ranked. ESOC: Not Ranked.# SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal ShrublandState Conservation Rank: Not Ranked. ESOC: Not Ranked.# SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal ShrublandState Conservation Rank: Not Ranked. ESOC: Not Ranked.# SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal ShrublandState Conservation Rank: Not Ranked. ESOC: Not Ranked.# SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal ShrublandState Conservation Rank: Not Ranked. ESOC: Not Ranked.# SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Ruderal ShrublandState Conservation Rank: Not Ranked. ESOC: Not Ranked.# SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920661
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons



Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Inter-Mountain Basins Big Sagebrush SteppeState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 15/26. Climate Vulnerability: Mod-High.
Source Record	920680
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Inter-Mountain Basins Big Sagebrush SteppeState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 15/26. Climate Vulnerability: Mod-High.
Source Record	920680
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Inter-Mountain Basins Big Sagebrush SteppeState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 15/26. Climate Vulnerability: Mod-High.
Source Record	920680
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Inter-Mountain Basins Big Sagebrush SteppeState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 15/26. Climate Vulnerability: Mod-High.
Source Record	920680
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Inter-Mountain Basins Big Sagebrush SteppeState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 15/26. Climate Vulnerability: Mod-High.
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Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Inter-Mountain Basins Big Sagebrush SteppeState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 15/26. Climate Vulnerability: Mod-High.
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SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons



Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Inter-Mountain Basins Big Sagebrush SteppeState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 15/26. Climate Vulnerability: Mod-High.
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Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Inter-Mountain Basins Big Sagebrush SteppeState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 15/26. Climate Vulnerability: Mod-High.
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Site Name	Benton County
Accuracy	NA
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Priority Area	Habitat Feature
Site Name	Benton County
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Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
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Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
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Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
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Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
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Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Inter-Mountain Basins Big Sagebrush SteppeState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 15/26. Climate Vulnerability: Mod-High.
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Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
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Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
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Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Inter-Mountain Basins Big Sagebrush SteppeState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 15/26. Climate Vulnerability: Mod-High.
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Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Inter-Mountain Basins Semi-Desert Shrub-SteppeState Conservation Rank: S1 (Critically Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 3/11. Climate Vulnerability: Mod- High.
Source Record	920727
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Inter-Mountain Basins Semi-Desert Shrub-Steppe State Conservation Rank: S1 (Critically Imperiled). ESOC: Yes. # SGCN Associated (Closely/Generally): 3/11. Climate Vulnerability: Mod-High.
Source Record	920727
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Source Entity	WA Dept. of Fish and Wildlife
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Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Inter-Mountain Basins Semi-Desert Shrub-Steppe State Conservation Rank: S1 (Critically Imperiled). ESOC: Yes. # SGCN Associated (Closely/Generally): 3/11. Climate Vulnerability: Mod-High.
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Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Inter-Mountain Basins Semi-Desert Shrub-Steppe State Conservation Rank: S1 (Critically Imperiled). ESOC: Yes. # SGCN Associated (Closely/Generally): 3/11. Climate Vulnerability: Mod-High.
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Site Name	Benton County
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State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Inter-Mountain Basins Semi-Desert Shrub-Steppe State Conservation Rank: S1 (Critically Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 3/11. Climate Vulnerability: Mod-High.
Source Record	920727
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Inter-Mountain Basins Semi-Desert Shrub-Steppe State Conservation Rank: S1 (Critically Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 3/11. Climate Vulnerability: Mod-High.
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Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Inter-Mountain Basins Semi-Desert Shrub-Steppe State Conservation Rank: S1 (Critically Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 3/11. Climate Vulnerability: Mod-High.
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Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Inter-Mountain Basins Semi-Desert Shrub-Steppe State Conservation Rank: S1 (Critically Imperiled). ESOC: Yes. # SGCN Associated (Closely/Generally): 3/11. Climate Vulnerability: Mod-High.
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Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Inter-Mountain Basins Semi-Desert Shrub-Steppe State Conservation Rank: S1 (Critically Imperiled). ESOC: Yes. # SGCN Associated (Closely/Generally): 3/11. Climate Vulnerability: Mod-High.
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Priority Area	Habitat Feature
Site Name	Benton County
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Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
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Priority Area	Habitat Feature
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Site Name	Benton County
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State Status	N/A
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Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Interior Western North American Temperate Ruderal Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920766
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Interior Western North American Temperate Ruderal Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
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Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
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Priority Area	Habitat Feature
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Site Name	Benton County
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Site Name	Benton County
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Shrub-steppe	
Priority Area	Habitat Feature
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Shrub-steppe	
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Site Name	Benton County
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Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
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Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
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Shrub-steppe	
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Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Western North American Ruderal Wet Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920811
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Western North American Ruderal Wet Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920811
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Western North American Ruderal Wet Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920811
Source Name	Terry Johnson, WDFW
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Shrub-steppe	
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Accuracy	NA
Notes	EVT: Western North American Ruderal Wet Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
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Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Western North American Ruderal Wet Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
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SGCN	N
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Site Name	Benton County
Accuracy	NA
Notes	EVT: Interior Western North American Temperate Ruderal Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920766
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Interior Western North American Temperate Ruderal Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920766
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Interior Western North American Temperate Ruderal Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920766
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Source Entity	WA Dept. of Fish and Wildlife
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Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons



Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Western North American Ruderal Wet Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920811
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Western North American Ruderal Wet Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
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SGCN	N
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Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
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Shrub-steppe	
Priority Area	Habitat Feature
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Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
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Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Western North American Ruderal Wet Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
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Sensitive	N
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Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Western North American Ruderal Wet Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
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Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Western North American Ruderal Wet Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
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Priority Area	Habitat Feature
Site Name	Benton County
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Site Name	Benton County
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Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Western North American Ruderal Wet Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920811
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Western North American Ruderal Wet Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920811
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Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Western North American Ruderal Wet Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
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Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Western North American Ruderal Wet Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
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Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
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SGCN	N
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Geometry Type	Polygons

Shrub-steppe	
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Site Name	Benton County
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SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

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Priority Area	Habitat Feature
Site Name	Benton County
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State Status	N/A
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Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons



Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Western North American Ruderal Wet Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
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Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Western North American Ruderal Wet Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
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State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Western North American Ruderal Wet Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
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Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Shrub-steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Western North American Ruderal Wet Shrubland State Conservation Rank: Not Ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920811
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Columbia Plateau Steppe and GrasslandState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 9/23. Climate Vulnerability: Low-Mod.
Source Record	920585
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Columbia Plateau Steppe and GrasslandState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 9/23. Climate Vulnerability: Low-Mod.
Source Record	920585
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Columbia Plateau Steppe and GrasslandState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 9/23. Climate Vulnerability: Low-Mod.
Source Record	920585
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Columbia Plateau Steppe and GrasslandState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 9/23. Climate Vulnerability: Low-Mod.
Source Record	920585
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
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Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Columbia Plateau Steppe and GrasslandState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 9/23. Climate Vulnerability: Low-Mod.
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SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Columbia Plateau Steppe and GrasslandState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 9/23. Climate Vulnerability: Low-Mod.
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SGCN	N
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Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Columbia Plateau Steppe and GrasslandState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 9/23. Climate Vulnerability: Low-Mod.
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Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Columbia Plateau Steppe and GrasslandState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 9/23. Climate Vulnerability: Low-Mod.
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Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
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Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Columbia Plateau Steppe and GrasslandState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 9/23. Climate Vulnerability: Low-Mod.
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Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Columbia Plateau Steppe and GrasslandState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 9/23. Climate Vulnerability: Low-Mod.
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Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
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Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Columbia Plateau Steppe and GrasslandState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 9/23. Climate Vulnerability: Low-Mod.
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Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Columbia Plateau Steppe and GrasslandState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 9/23. Climate Vulnerability: Low-Mod.
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PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Introduced Annual Grassland State Conservation Rank: Not ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920623
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Introduced Annual Grassland State Conservation Rank: Not ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
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Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Introduced Annual Grassland State Conservation Rank: Not ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
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SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Introduced Annual Grassland State Conservation Rank: Not ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
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SGCN	N
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Geometry Type	Polygons



Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Introduced Annual Grassland State Conservation Rank: Not ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
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Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
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Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Columbia Plateau Steppe and GrasslandState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 9/23. Climate Vulnerability: Low-Mod.
Source Record	920585
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Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
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Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
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Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
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Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
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SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Introduced Annual Grassland State Conservation Rank: Not ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
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Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
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SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Introduced Annual Grassland State Conservation Rank: Not ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
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State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Introduced Annual Grassland State Conservation Rank: Not ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920623
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Columbia Plateau Steppe and GrasslandState Conservation Rank: S2 (Imperiled). ESOC: Yes.# SGCN Associated (Closely/Generally): 9/23. Climate Vulnerability: Low-Mod.
Source Record	920585
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Interior Western North American Temperate Ruderal GrasslandState Conservation Rank: Not ranked. ESOC: Not Ranked.# SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920746
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons



Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Interior Western North American Temperate Ruderal Grassland State Conservation Rank: Not ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920746
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Interior Western North American Temperate Ruderal Grassland State Conservation Rank: Not ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920746
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Interior Western North American Temperate Ruderal Grassland State Conservation Rank: Not ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920746
Source Name	Terry Johnson, WDFW
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Federal Status	N/A
State Status	N/A
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Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Interior Western North American Temperate Ruderal Grassland State Conservation Rank: Not ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920746
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PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Interior Western North American Temperate Ruderal Grassland State Conservation Rank: Not ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
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Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Interior Western North American Temperate Ruderal Grassland State Conservation Rank: Not ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920746
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
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Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Eastside Steppe	
Priority Area	Habitat Feature
Site Name	Benton County
Accuracy	NA
Notes	EVT: Great Basin & Intermountain Introduced Perennial Grassland and Forbland State Conservation Rank: Not ranked. ESOC: Not Ranked. # SGCN Associated (Closely/Generally): NR. Climate Vulnerability: NR.
Source Record	920642
Source Name	Terry Johnson, WDFW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
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Geometry Type	Polygons

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Source Entity	WA Dept. of Fish and Wildlife
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SGCN	N
Display Resolution	AS MAPPED
Geometry Type	Polygons

Townsend's Ground Squirrel - townsendii	
Scientific Name	<i>Urocitellus townsendii townsendii</i>
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release (360-902-2543) for obtaining information about masked sensitive species and habitats.
Federal Status	N/A
State Status	Candidate
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
SGCN	Y
Display Resolution	QTR-TWP

Townsend's Ground Squirrel - townsendii	
Scientific Name	<i>Urocitellus townsendii townsendii</i>
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release (360-902-2543) for obtaining information about masked sensitive species and habitats.
Federal Status	N/A
State Status	Candidate
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	Y
SGCN	Y
Display Resolution	QTR-TWP

DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW biologists, or in areas for which comprehensive surveys have not been conducted. Site specific surveys are frequently necessary to rule out the presence of priority resources. Locations of fish and wildlife resources are subject to variation caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.



## **APPENDIX C**

### **Wetland Determination Datasheets**



# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Lower Yakima River Coldwater Refugia Improvements City/County: Richland/Benton Sampling Date: 5/10/2022  
 Applicant/Owner: USACE State: WA Sampling Point: 1  
 Investigator(s): L. Baldwin, R. Tobias Section, Township, Range: Sec. 24, T 9N, R28E  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 1-2  
 Subregion (LRR): B Lat: 46.24586 Long: -119.2626 Datum: WGS84  
 Soil Map Unit Name: Pasco silt loam, 0 to 2 percent slopes NWI Classification: PFO

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

## VEGETATION – Use scientific names of plants.

<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Tree Stratum (Plot size: <u>30ft radius</u> )</th> <th>Absolute % Cover</th> <th>Dom. Sp.?</th> <th>Relative % Cover</th> <th>Indicator Status</th> </tr> </thead> <tbody> <tr><td>1. _____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>2. _____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>3. _____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>4. _____</td><td>_____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td></td> <td colspan="4" style="text-align: right;">_____ = Total Cover</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Sapling/Shrub Stratum (Plot size: <u>10ft radius</u> )</th> <th>Absolute % Cover</th> <th>Dom. 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Relative % Cover	Indicator Status	1. _____	_____	_____	_____	_____	2. _____	_____	_____	_____	_____	3. _____	_____	_____	_____	_____	4. _____	_____	_____	_____	_____	5. _____	_____	_____	_____	_____		_____ = Total Cover				Herb Stratum (Plot size: <u>5ft radius</u> )	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status	1. <u>Elymus elymoides</u>	<u>40</u>	<u>Y</u>	<u>44.4</u>	<u>FACU</u>	2. <u>Bromus tectorum</u>	<u>50</u>	<u>Y</u>	<u>55.6</u>	<u>UPL</u>	3. _____	_____	_____	_____	_____	4. _____	_____	_____	_____	_____	5. _____	_____	_____	_____	_____	6. _____	_____	_____	_____	_____	7. _____	_____	_____	_____	_____	8. _____	_____	_____	_____	_____		<u>90</u> = Total Cover				Woody Vine Stratum (Plot size: <u>10ft radius</u> )	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status	1. _____	_____	_____	_____	_____	2. _____	_____	_____	_____	_____		_____ = Total Cover				<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2">Dominance Test worksheet:</th> </tr> <tr> <td>Number of Dominant Species That Are OBL, FACW, or FAC:</td> <td style="text-align: right;"><u>0</u> (A)</td> </tr> <tr> <td>Total Number of Dominant Species Across All Strata:</td> <td style="text-align: right;"><u>2</u> (B)</td> </tr> <tr> <td>Percent of Dominant Species That Are OBL, FACW, or FAC:</td> <td style="text-align: right;"><u>0.0%</u> (A/B)</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2">Prevalence Index worksheet:</th> </tr> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>40</u></td> <td>x 4 = <u>160</u></td> </tr> <tr> <td>UPL species <u>50</u></td> <td>x 5 = <u>250</u></td> </tr> <tr> <td>Column Totals: <u>90</u> (A)</td> <td><u>410</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: right;">Prevalence Index = B/A = <u>4.556</u></td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2">Hydrophytic Vegetation Indicators:</th> </tr> <tr> <td><input type="checkbox"/> Dominance Test is &gt;50%</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Prevalence Index is ≤3.0<sup>1</sup></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)</td> <td></td> </tr> <tr> <td colspan="2"><sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td> <b>Hydrophytic Vegetation Present?</b>  <input type="radio"/> Yes <input checked="" type="radio"/> No       </td> </tr> </table>	Dominance Test worksheet:		Number of Dominant Species That Are OBL, FACW, or FAC:	<u>0</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>0.0%</u> (A/B)	Prevalence Index worksheet:		Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>40</u>	x 4 = <u>160</u>	UPL species <u>50</u>	x 5 = <u>250</u>	Column Totals: <u>90</u> (A)	<u>410</u> (B)	Prevalence Index = B/A = <u>4.556</u>		Hydrophytic Vegetation Indicators:		<input type="checkbox"/> Dominance Test is >50%		<input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup>		<input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)		<input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)		<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.		<b>Hydrophytic Vegetation Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
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# SOIL

Sampling Point: 1

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 <sup>1</sup>	Loc <sup>2</sup>			

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
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Remarks: \_\_\_\_\_

# HYDROLOGY

Wetland Hydrology Indicators:			
<b>Primary Indicators (minimum of one required; check all that apply)</b>		<b>Secondary Indicators (2 or more required)</b>	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thick Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b> Surface Water Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Water Table Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Saturation Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Lower Yakima River Coldwater Refugia Improvements City/County: Richland/Benton Sampling Date: 5/10/2022  
 Applicant/Owner: USACE State: WA Sampling Point: 2  
 Investigator(s): L. Baldwin, R. Tobias Section, Township, Range: Sec. 24, T 9N, R28E  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 1-2  
 Subregion (LRR): B Lat: 46.24618 Long: -119.263 Datum: WGS84  
 Soil Map Unit Name: Pasco silt loam, 0 to 2 percent slopes NWI Classification: PFO

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

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft radius )	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</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>33.3%</u> (A/B)														
1. _____	_____	_____	_____	_____															
2. _____	_____	_____	_____	_____															
3. _____	_____	_____	_____	_____															
4. _____	_____	_____	_____	_____															
_____ = Total Cover																			
<b>Sapling/Shrub Stratum (Plot size: 10ft radius )</b>					<b>Prevalence Index worksheet:</b> <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr><td>OBL species</td><td>0 x 1 = 0</td></tr> <tr><td>FACW species</td><td>40 x 2 = 80</td></tr> <tr><td>FAC species</td><td>0 x 3 = 0</td></tr> <tr><td>FACU species</td><td>30 x 4 = 120</td></tr> <tr><td>UPL species</td><td>30 x 5 = 150</td></tr> <tr><td>Column Totals:</td><td>100 (A) 350 (B)</td></tr> </tbody> </table> Prevalence Index = B/A = <u>3.500</u>	Total % Cover of:	Multiply by:	OBL species	0 x 1 = 0	FACW species	40 x 2 = 80	FAC species	0 x 3 = 0	FACU species	30 x 4 = 120	UPL species	30 x 5 = 150	Column Totals:	100 (A) 350 (B)
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1. _____	_____	_____	_____	_____															
2. _____	_____	_____	_____	_____															
3. _____	_____	_____	_____	_____															
4. _____	_____	_____	_____	_____															
_____ = Total Cover																			
<b>Herb Stratum (Plot size: 5ft radius )</b>					<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
1. <u>Elymus glaucus</u>	30	Y	26.1	FACU															
2. <u>Bromus tectorum</u>	30	Y	26.1	UPL															
3. <u>Phalaris arundinacea</u>	40	Y	34.8	FACW															
4. <u>Anthriscus caucalis</u>	15	N	13.0	#N/A															
5. _____	_____	_____	_____	_____															
6. _____	_____	_____	_____	_____															
7. _____	_____	_____	_____	_____															
8. _____	_____	_____	_____	_____															
115 = Total Cover																			
<b>Woody Vine Stratum (Plot size: 10ft radius )</b>					<b>Hydrophytic Vegetation Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No														
1. _____	_____	_____	_____	_____															
2. _____	_____	_____	_____	_____															
_____ = Total Cover																			
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust <u>0</u>																			

Remarks:

# SOIL

Sampling Point: 2

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 <sup>1</sup>	Loc <sup>2</sup>			

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b> <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)  <input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)
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<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
--	---

Remarks: \_\_\_\_\_

# HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one required; check all that apply)</u>			<u>Secondary Indicators (2 or more required)</u>		
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thick Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)			

<b>Field Observations:</b> Surface Water Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Water Table Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Saturation Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Lower Yakima River Coldwater Refugia Improvements City/County: Richland/Benton Sampling Date: 5/10/2022  
 Applicant/Owner: USACE State: WA Sampling Point: 3  
 Investigator(s): L. Baldwin, R. Tobias Section, Township, Range: Sec. 24, T 9N, R28E  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 1-2  
 Subregion (LRR): B Lat: 46.24479 Long: -119.2605 Datum: WGS84  
 Soil Map Unit Name: Pasco silt loam, 0 to 2 percent slopes NWI Classification: PFO

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

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30ft radius</u> )	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</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>0.0%</u> (A/B)																
1. _____	_____	_____	_____	_____																	
2. _____	_____	_____	_____	_____																	
3. _____	_____	_____	_____	_____																	
4. _____	_____	_____	_____	_____																	
_____ = Total Cover																					
Sapling/Shrub Stratum (Plot size: <u>10ft radius</u> )					<b>Prevalence Index worksheet:</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 40%;">Total % Cover of:</th> <th style="width: 60%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>85</u></td> <td>x 4 = <u>340</u></td> </tr> <tr> <td>UPL species <u>5</u></td> <td>x 5 = <u>25</u></td> </tr> <tr> <td>Column Totals: <u>90</u> (A)</td> <td><u>365</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>4.056</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>85</u>	x 4 = <u>340</u>	UPL species <u>5</u>	x 5 = <u>25</u>	Column Totals: <u>90</u> (A)	<u>365</u> (B)	Prevalence Index = B/A = <u>4.056</u>	
Total % Cover of:	Multiply by:																				
OBL species <u>0</u>	x 1 = <u>0</u>																				
FACW species <u>0</u>	x 2 = <u>0</u>																				
FAC species <u>0</u>	x 3 = <u>0</u>																				
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UPL species <u>5</u>	x 5 = <u>25</u>																				
Column Totals: <u>90</u> (A)	<u>365</u> (B)																				
Prevalence Index = B/A = <u>4.056</u>																					
1. _____	_____	_____	_____	_____																	
2. _____	_____	_____	_____	_____																	
3. _____	_____	_____	_____	_____																	
4. _____	_____	_____	_____	_____																	
5. _____	_____	_____	_____	_____																	
_____ = Total Cover																					
Herb Stratum (Plot size: <u>5ft radius</u> )					<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0' <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <u>Elymus glaucus</u>	<u>80</u>	<u>Y</u>	<u>88.9</u>	<u>FACU</u>																	
2. <u>Bromus tectorum</u>	<u>5</u>	<u>N</u>	<u>5.6</u>	<u>UPL</u>																	
3. <u>Lactuca serriola</u>	<u>5</u>	<u>N</u>	<u>5.6</u>	<u>FACU</u>																	
4. _____	_____	_____	_____	_____																	
5. _____	_____	_____	_____	_____																	
6. _____	_____	_____	_____	_____																	
7. _____	_____	_____	_____	_____																	
8. _____	_____	_____	_____	_____																	
<u>90</u> = Total Cover																					
Woody Vine Stratum (Plot size: <u>10ft radius</u> )																					
1. _____	_____	_____	_____	_____																	
2. _____	_____	_____	_____	_____																	
_____ = Total Cover																					
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust <u>0</u>																					

Remarks:	<b>Hydrophytic Vegetation Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
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## SOIL

Sampling Point: 3

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 <sup>1</sup>	Loc <sup>2</sup>		

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> <input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)  <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
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<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
Remarks:	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one required; check all that apply)</u>			<u>Secondary Indicators (2 or more required)</u>		
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thick Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)			
<b>Field Observations:</b> Surface Water Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Water Table Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Saturation Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ (includes capillary fringe)			<b>Wetland Hydrology Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks:					



# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Lower Yakima River Coldwater Refugia Improvements City/County: Richland/Benton Sampling Date: 5/10/2022  
 Applicant/Owner: USACE State: WA Sampling Point: 4  
 Investigator(s): L. Baldwin, R. Tobias Section, Township, Range: Sec. 24, T 9N, R28E  
 Landform (hillslope, terrace, etc.): stream bank Local relief (concave, convex, none): concave Slope (%): 1-2  
 Subregion (LRR): B Lat: 46.24591 Long: -119.2595 Datum: WGS84  
 Soil Map Unit Name: Pasco silt loam, 0 to 2 percent slopes NWI Classification: PFO

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

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft radius )	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</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>100.0%</u> (A/B)																								
1. _____	_____	_____	_____	_____																									
2. _____	_____	_____	_____	_____																									
3. _____	_____	_____	_____	_____																									
4. _____	_____	_____	_____	_____																									
_____ = Total Cover					<b>Prevalence Index worksheet:</b> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">Total % Cover of:</th> <th style="width: 20%;">Multiply by:</th> <th style="width: 40%;"></th> </tr> </thead> <tbody> <tr> <td>OBL species <u>0</u></td> <td>x 1 =</td> <td><u>0</u></td> </tr> <tr> <td>FACW species <u>90</u></td> <td>x 2 =</td> <td><u>180</u></td> </tr> <tr> <td>FAC species <u>20</u></td> <td>x 3 =</td> <td><u>60</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 =</td> <td><u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 =</td> <td><u>0</u></td> </tr> <tr> <td>Column Totals: <u>110</u></td> <td>(A)</td> <td><u>240</u> (B)</td> </tr> <tr> <td colspan="3" style="text-align: center;">Prevalence Index = B/A = <u>2.182</u></td> </tr> </tbody> </table>	Total % Cover of:	Multiply by:		OBL species <u>0</u>	x 1 =	<u>0</u>	FACW species <u>90</u>	x 2 =	<u>180</u>	FAC species <u>20</u>	x 3 =	<u>60</u>	FACU species <u>0</u>	x 4 =	<u>0</u>	UPL species <u>0</u>	x 5 =	<u>0</u>	Column Totals: <u>110</u>	(A)	<u>240</u> (B)	Prevalence Index = B/A = <u>2.182</u>		
Total % Cover of:	Multiply by:																												
OBL species <u>0</u>	x 1 =	<u>0</u>																											
FACW species <u>90</u>	x 2 =	<u>180</u>																											
FAC species <u>20</u>	x 3 =	<u>60</u>																											
FACU species <u>0</u>	x 4 =	<u>0</u>																											
UPL species <u>0</u>	x 5 =	<u>0</u>																											
Column Totals: <u>110</u>	(A)	<u>240</u> (B)																											
Prevalence Index = B/A = <u>2.182</u>																													
<b>Sapling/Shrub Stratum (Plot size: 10ft radius )</b> 1. <u><i>Elaeagnus angustifolia</i></u> <u>20</u> <u>Y</u> <u>100.0</u> <u>FAC</u> 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover																													
<b>Herb Stratum (Plot size: 5ft radius )</b> 1. <u><i>Phalaris arundinacea</i></u> <u>90</u> <u>Y</u> <u>94.7</u> <u>FACW</u> 2. <u><i>Anthriscus caucalis</i></u> <u>5</u> <u>N</u> <u>5.3</u> <u>#N/A</u> 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ _____ = Total Cover																													
<b>Woody Vine Stratum (Plot size: 10ft radius )</b> 1. _____ 2. _____ _____ = Total Cover																													
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____																													

**Hydrophytic Vegetation Indicators:**  
☒ Dominance Test is >50%  
☒ Prevalence Index is ≤3.0<sup>1</sup>  
☐ Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
☐ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)  
<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?**  
☒ Yes ☐ No

Remarks:

## SOIL

Sampling Point: 4

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 <sup>1</sup>	Loc <sup>2</sup>			

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)  <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> <input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input checked="" type="checkbox"/> Other (Explain in Remarks)  <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
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<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No
Remarks: Hydric soils assumed- not allowed to dig	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one required; check all that apply)</u>				<u>Secondary Indicators (2 or more required)</u>			
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thick Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water Marks (B1) (Riverine) <input checked="" type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)					

<b>Field Observations:</b> Surface Water Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Water Table Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Saturation Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Lower Yakima River Coldwater Refugia Improvements City/County: Richland/Benton Sampling Date: 5/10/2022  
 Applicant/Owner: USACE State: WA Sampling Point: 5  
 Investigator(s): L. Baldwin, R. Tobias Section, Township, Range: Sec. 24, T 9N, R28E  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 1-2  
 Subregion (LRR): B Lat: 46.24954 Long: -119.26 Datum: WGS84  
 Soil Map Unit Name: Pasco silt loam, 0 to 2 percent slopes NWI Classification: PFO

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

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft radius )	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status															
1. _____	_____	_____	_____	_____	<b>Dominance Test worksheet:</b> 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)														
2. _____	_____	_____	_____	_____															
3. _____	_____	_____	_____	_____															
4. _____	_____	_____	_____	_____															
_____ = Total Cover																			
<b>Sapling/Shrub Stratum (Plot size: 10ft radius )</b>					<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>15</u></td> <td>x 3 = <u>45</u></td> </tr> <tr> <td>FACU species <u>85</u></td> <td>x 4 = <u>340</u></td> </tr> <tr> <td>UPL species <u>10</u></td> <td>x 5 = <u>50</u></td> </tr> <tr> <td>Column Totals: <u>110</u> (A)</td> <td><u>435</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.955</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>15</u>	x 3 = <u>45</u>	FACU species <u>85</u>	x 4 = <u>340</u>	UPL species <u>10</u>	x 5 = <u>50</u>	Column Totals: <u>110</u> (A)	<u>435</u> (B)
Total % Cover of:	Multiply by:																		
OBL species <u>0</u>	x 1 = <u>0</u>																		
FACW species <u>0</u>	x 2 = <u>0</u>																		
FAC species <u>15</u>	x 3 = <u>45</u>																		
FACU species <u>85</u>	x 4 = <u>340</u>																		
UPL species <u>10</u>	x 5 = <u>50</u>																		
Column Totals: <u>110</u> (A)	<u>435</u> (B)																		
1. <u>Elaeagnus angustifolia</u>	<u>15</u>	<u>Y</u>	<u>100.0</u>	<u>FAC</u>															
2. _____	_____	_____	_____	_____															
3. _____	_____	_____	_____	_____															
4. _____	_____	_____	_____	_____															
5. _____	_____	_____	_____	_____															
_____ = Total Cover																			
<b>Herb Stratum (Plot size: 5ft radius )</b>					<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0¹ <input type="checkbox"/> Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation¹ (Explain) ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
1. <u>Bromus inermis</u>	<u>80</u>	<u>Y</u>	<u>80.0</u>	<u>FACU</u>															
2. <u>Anthriscus caucalis</u>	<u>5</u>	<u>N</u>	<u>5.0</u>	<u>#N/A</u>															
3. <u>Bromus tectorum</u>	<u>10</u>	<u>N</u>	<u>10.0</u>	<u>UPL</u>															
4. <u>Cirsium arvense</u>	<u>5</u>	<u>N</u>	<u>5.0</u>	<u>FACU</u>															
5. _____	_____	_____	_____	_____															
6. _____	_____	_____	_____	_____															
7. _____	_____	_____	_____	_____															
8. _____	_____	_____	_____	_____															
_____ = Total Cover																			
<b>Woody Vine Stratum (Plot size: 10ft radius )</b>					<b>Hydrophytic Vegetation Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No														
1. _____	_____	_____	_____	_____															
2. _____	_____	_____	_____	_____															
_____ = Total Cover																			
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____																			

Remarks:
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## SOIL

Sampling Point: 5

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 <sup>1</sup>	Loc <sup>2</sup>			

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> <input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)
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<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
Remarks:	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one required; check all that apply)</u>				<u>Secondary Indicators (2 or more required)</u>			
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thick Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)					

<b>Field Observations:</b> Surface Water Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Water Table Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Saturation Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Lower Yakima River Coldwater Refugia Improvements City/County: Richland/Benton Sampling Date: 5/10/2022  
 Applicant/Owner: USACE State: WA Sampling Point: 6  
 Investigator(s): L. Baldwin, R. Tobias Section, Township, Range: Sec. 24, T 9N, R28E  
 Landform (hillslope, terrace, etc.): terrace above Yakima River Local relief (concave, convex, none): none Slope (%): 1-2  
 Subregion (LRR): B Lat: 46.25013 Long: -119.2601 Datum: WGS84  
 Soil Map Unit Name: Pasco silt loam, 0 to 2 percent slopes NWI Classification: PFO

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

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft radius )	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25.0%</u> (A/B)																																								
1. <u>Robinia pseudoacacia</u>	60	Y	100.0	FACU																																									
2. _____	_____	_____	_____	_____																																									
3. _____	_____	_____	_____	_____																																									
4. _____	_____	_____	_____	_____																																									
60 = Total Cover					<b>Prevalence Index worksheet:</b> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">Total % Cover of:</th> <th style="width: 10%;"></th> <th style="width: 10%;">Multiply by:</th> <th style="width: 10%;"></th> <th style="width: 10%;"></th> </tr> </thead> <tbody> <tr> <td>OBL species</td> <td>0</td> <td>x 1 =</td> <td>0</td> <td></td> </tr> <tr> <td>FACW species</td> <td>0</td> <td>x 2 =</td> <td>0</td> <td></td> </tr> <tr> <td>FAC species</td> <td>60</td> <td>x 3 =</td> <td>180</td> <td></td> </tr> <tr> <td>FACU species</td> <td>70</td> <td>x 4 =</td> <td>280</td> <td></td> </tr> <tr> <td>UPL species</td> <td>0</td> <td>x 5 =</td> <td>0</td> <td></td> </tr> <tr> <td>Column Totals:</td> <td>130</td> <td>(A)</td> <td>460</td> <td>(B)</td> </tr> <tr> <td colspan="4">Prevalence Index = B/A =</td> <td><u>3.538</u></td> </tr> </tbody> </table>	Total % Cover of:		Multiply by:			OBL species	0	x 1 =	0		FACW species	0	x 2 =	0		FAC species	60	x 3 =	180		FACU species	70	x 4 =	280		UPL species	0	x 5 =	0		Column Totals:	130	(A)	460	(B)	Prevalence Index = B/A =				<u>3.538</u>
Total % Cover of:		Multiply by:																																											
OBL species	0	x 1 =	0																																										
FACW species	0	x 2 =	0																																										
FAC species	60	x 3 =	180																																										
FACU species	70	x 4 =	280																																										
UPL species	0	x 5 =	0																																										
Column Totals:	130	(A)	460	(B)																																									
Prevalence Index = B/A =				<u>3.538</u>																																									
<b>Sapling/Shrub Stratum (Plot size: 10ft radius )</b> 1. <u>Monus alba</u> 20 Y 100.0 #N/A 2. _____ 3. _____ 4. _____ 5. _____ 20 = Total Cover																																													
<b>Herb Stratum (Plot size: 5ft radius )</b> 1. <u>Poa palustris</u> 60 Y 60.0 FAC 2. <u>Anthriscus caucalis</u> 30 Y 30.0 #N/A 3. <u>Bromus inermis</u> 10 N 10.0 FACU 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 100 = Total Cover																																													
<b>Woody Vine Stratum (Plot size: 10ft radius )</b> 1. _____ 2. _____ _____ = Total Cover																																													
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____																																													
Remarks:																																													

Remarks:	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
<b>Hydrophytic Vegetation Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No	

## SOIL

Sampling Point: 6

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 <sup>1</sup>	Loc <sup>2</sup>			

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)  <input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)
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<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
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Remarks: \_\_\_\_\_

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one required; check all that apply)</u>				<u>Secondary Indicators (2 or more required)</u>			
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thick Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)					

<b>Field Observations:</b> Surface Water Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Water Table Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Saturation Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_



# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Lower Yakima River Coldwater Refugia Improvements City/County: Richland/Benton Sampling Date: 5/10/2022  
 Applicant/Owner: USACE State: WA Sampling Point: 7  
 Investigator(s): L. Baldwin, R. Tobias Section, Township, Range: Sec. 24, T 9N, R28E  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 1-2  
 Subregion (LRR): B Lat: 46.24903 Long: -119.2592 Datum: WGS84  
 Soil Map Unit Name: Pasco silt loam, 0 to 2 percent slopes NWI Classification: PFO

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

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30ft radius</u> )	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status															
1. _____	_____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</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>0.0%</u> (A/B)														
2. _____	_____	_____	_____	_____															
3. _____	_____	_____	_____	_____															
4. _____	_____	_____	_____	_____															
_____ = Total Cover																			
<b>Sapling/Shrub Stratum</b> (Plot size: <u>10ft radius</u> )					<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>100</u></td> <td>x 4 = <u>400</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>400</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>4.000</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>100</u>	x 4 = <u>400</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>100</u> (A)	<u>400</u> (B)
Total % Cover of:	Multiply by:																		
OBL species <u>0</u>	x 1 = <u>0</u>																		
FACW species <u>0</u>	x 2 = <u>0</u>																		
FAC species <u>0</u>	x 3 = <u>0</u>																		
FACU species <u>100</u>	x 4 = <u>400</u>																		
UPL species <u>0</u>	x 5 = <u>0</u>																		
Column Totals: <u>100</u> (A)	<u>400</u> (B)																		
1. <u>Monus alba</u>	<u>70</u>	<u>Y</u>	<u>100.0</u>	<u>#N/A</u>															
2. _____	_____	_____	_____	_____															
3. _____	_____	_____	_____	_____															
4. _____	_____	_____	_____	_____															
5. _____	_____	_____	_____	_____															
_____ = Total Cover																			
<b>Herb Stratum</b> (Plot size: <u>5ft radius</u> )					<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
1. <u>Galium aparine</u>	<u>100</u>	<u>Y</u>	<u>100.0</u>	<u>FACU</u>															
2. _____	_____	_____	_____	_____															
3. _____	_____	_____	_____	_____															
4. _____	_____	_____	_____	_____															
5. _____	_____	_____	_____	_____															
6. _____	_____	_____	_____	_____															
7. _____	_____	_____	_____	_____															
8. _____	_____	_____	_____	_____															
_____ = Total Cover																			
<b>Woody Vine Stratum</b> (Plot size: <u>10ft radius</u> )					<b>Hydrophytic Vegetation Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No														
1. _____	_____	_____	_____	_____															
2. _____	_____	_____	_____	_____															
_____ = Total Cover																			
% Bare Ground in Herb Stratum _____		% Cover of Biotic Crust _____																	

Remarks:
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# SOIL

Sampling Point: 7

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 <sup>1</sup>	Loc <sup>2</sup>			

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
--	---

Remarks: \_\_\_\_\_

# HYDROLOGY

Wetland Hydrology Indicators:			
<b>Primary Indicators (minimum of one required; check all that apply)</b>		<b>Secondary Indicators (2 or more required)</b>	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thick Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b> Surface Water Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Water Table Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Saturation Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Lower Yakima River Coldwater Refugia Improvements City/County: Richland/Benton Sampling Date: 5/10/2022  
 Applicant/Owner: USACE State: WA Sampling Point: 8  
 Investigator(s): L. Baldwin, R. Tobias Section, Township, Range: Sec. 24, T 9N, R28E  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 1-2  
 Subregion (LRR): B Lat: 46.24641 Long: -119.2593 Datum: WGS84  
 Soil Map Unit Name: Pasco silt loam, 0 to 2 percent slopes NWI Classification: PFO

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

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft radius )	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status															
1. _____	_____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</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>100.0%</u> (A/B)														
2. _____	_____	_____	_____	_____															
3. _____	_____	_____	_____	_____															
4. _____	_____	_____	_____	_____															
_____ = Total Cover																			
<b>Sapling/Shrub Stratum (Plot size: 10ft radius )</b>					<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>80</u></td> <td>x 3 = <u>240</u></td> </tr> <tr> <td>FACU species <u>5</u></td> <td>x 4 = <u>20</u></td> </tr> <tr> <td>UPL species <u>25</u></td> <td>x 5 = <u>125</u></td> </tr> <tr> <td>Column Totals: <u>110</u></td> <td>(A) <u>385</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.500</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>80</u>	x 3 = <u>240</u>	FACU species <u>5</u>	x 4 = <u>20</u>	UPL species <u>25</u>	x 5 = <u>125</u>	Column Totals: <u>110</u>	(A) <u>385</u> (B)
Total % Cover of:	Multiply by:																		
OBL species <u>0</u>	x 1 = <u>0</u>																		
FACW species <u>0</u>	x 2 = <u>0</u>																		
FAC species <u>80</u>	x 3 = <u>240</u>																		
FACU species <u>5</u>	x 4 = <u>20</u>																		
UPL species <u>25</u>	x 5 = <u>125</u>																		
Column Totals: <u>110</u>	(A) <u>385</u> (B)																		
1. <u>Elaeagnus angustifolia</u>	<u>20</u>	<u>Y</u>	<u>100.0</u>	<u>FAC</u>															
2. _____	_____	_____	_____	_____															
3. _____	_____	_____	_____	_____															
4. _____	_____	_____	_____	_____															
_____ = Total Cover																			
<b>Herb Stratum (Plot size: 5ft radius )</b>					<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
1. <u>Poa palustris</u>	<u>60</u>	<u>Y</u>	<u>66.7</u>	<u>FAC</u>															
2. <u>Bromus inermis</u>	<u>5</u>	<u>N</u>	<u>5.6</u>	<u>FACU</u>															
3. <u>Convolvulus arvensis</u>	<u>15</u>	<u>N</u>	<u>16.7</u>	<u>UPL</u>															
4. <u>Centaurea stoebe</u>	<u>10</u>	<u>N</u>	<u>11.1</u>	<u>UPL</u>															
5. _____	_____	_____	_____	_____															
6. _____	_____	_____	_____	_____															
7. _____	_____	_____	_____	_____															
8. _____	_____	_____	_____	_____															
_____ = Total Cover																			
<b>Woody Vine Stratum (Plot size: 10ft radius )</b>					<b>Hydrophytic Vegetation Present?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No														
1. _____	_____	_____	_____	_____															
2. _____	_____	_____	_____	_____															
_____ = Total Cover																			
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____																			

Remarks:
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## SOIL

Sampling Point: 8

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 <sup>1</sup>	Loc <sup>2</sup>			

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)  <input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)
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<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
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Remarks: \_\_\_\_\_

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one required; check all that apply)</u>				<u>Secondary Indicators (2 or more required)</u>			
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thick Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)					

<b>Field Observations:</b> Surface Water Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Water Table Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Saturation Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Lower Yakima River Coldwater Refugia Improvements City/County: Richland/Benton Sampling Date: 5/10/2022  
 Applicant/Owner: USACE State: WA Sampling Point: 9  
 Investigator(s): L. Baldwin, R. Tobias Section, Township, Range: Sec. 24, T 9N, R28E  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 1-2  
 Subregion (LRR): B Lat: 46.24677 Long: -119.2587 Datum: WGS84  
 Soil Map Unit Name: Pasco silt loam, 0 to 2 percent slopes NWI Classification: PFO

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

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft radius )	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status																	
1. _____	_____	_____	_____	_____	<b>Dominance Test worksheet:</b> 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)																
2. _____	_____	_____	_____	_____																	
3. _____	_____	_____	_____	_____																	
4. _____	_____	_____	_____	_____																	
_____ = Total Cover																					
<b>Sapling/Shrub Stratum (Plot size: 10ft radius )</b>					<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>70</u></td> <td>x 3 = <u>210</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>70</u></td> <td>(A) <u>210</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.000</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>70</u>	x 3 = <u>210</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>70</u>	(A) <u>210</u> (B)	Prevalence Index = B/A = <u>3.000</u>	
Total % Cover of:	Multiply by:																				
OBL species <u>0</u>	x 1 = <u>0</u>																				
FACW species <u>0</u>	x 2 = <u>0</u>																				
FAC species <u>70</u>	x 3 = <u>210</u>																				
FACU species <u>0</u>	x 4 = <u>0</u>																				
UPL species <u>0</u>	x 5 = <u>0</u>																				
Column Totals: <u>70</u>	(A) <u>210</u> (B)																				
Prevalence Index = B/A = <u>3.000</u>																					
1. <u>Elaeagnus angustifolia</u>	<u>70</u>	<u>Y</u>	<u>100.0</u>	<u>FAC</u>																	
2. _____	_____	_____	_____	_____																	
3. _____	_____	_____	_____	_____																	
4. _____	_____	_____	_____	_____																	
5. _____	_____	_____	_____	_____																	
_____ = Total Cover																					
<b>Herb Stratum (Plot size: 5ft radius )</b>					<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0¹ <input type="checkbox"/> Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation¹ (Explain) ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <u>Anthriscus caucalis</u>	<u>90</u>	<u>Y</u>	<u>100.0</u>	<u>#N/A</u>																	
2. _____	_____	_____	_____	_____																	
3. _____	_____	_____	_____	_____																	
4. _____	_____	_____	_____	_____																	
5. _____	_____	_____	_____	_____																	
6. _____	_____	_____	_____	_____																	
7. _____	_____	_____	_____	_____																	
8. _____	_____	_____	_____	_____																	
_____ = Total Cover																					
<b>Woody Vine Stratum (Plot size: 10ft radius )</b>					<b>Hydrophytic Vegetation Present?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No																
1. _____	_____	_____	_____	_____																	
2. _____	_____	_____	_____	_____																	
_____ = Total Cover																					
% Bare Ground in Herb Stratum _____		% Cover of Biotic Crust _____																			

Remarks:

# SOIL

Sampling Point: 9

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 <sup>1</sup>	Loc <sup>2</sup>			

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)  <input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)
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<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
--	---

Remarks: \_\_\_\_\_

# HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one required; check all that apply)</u>				<u>Secondary Indicators (2 or more required)</u>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)		<input type="checkbox"/> Sediment Deposits (B2) (Riverine)			
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)		<input type="checkbox"/> Drainage Patterns (B10)			
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)		<input type="checkbox"/> Crayfish Burrows (C8)			
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)		<input type="checkbox"/> Shallow Aquitard (D3)			
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> FAC-Neutral Test (D5)					
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)						
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)						
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thick Muck Surface (C7)						
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)						

<b>Field Observations:</b> Surface Water Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Water Table Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Saturation Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: \_\_\_\_\_



# WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Lower Yakima River Coldwater Refugia Improvements City/County: Richland/Benton Sampling Date: 10/19/2022  
 Applicant/Owner: USACE State: WA Sampling Point: 10  
 Investigator(s): R. Tobias Section, Township, Range: Sec 24, T 09N, R 28E  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): concave Slope (%): 3  
 Subregion (LRR): LRR B Lat: 46.244189° Long: -119.263482° Datum: NAD 83  
 Soil Map Unit Name: Pasco silt loam, 0 to 2 percent slopes NWI classification: None  
 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="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks:			

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30-ft radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u><i>Elaeagnus angustifolia</i></u>	<u>70</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B)
4. _____	_____	_____	_____	
50% = <u>35</u> , 20% = <u>14</u>	<u>70</u>	= Total Cover		
<u>Sapling/Shrub Stratum (Plot size: 15-ft radius)</u>				
1. <u><i>Celtis reticulata</i></u>	<u>5</u>	<u>yes</u>	<u>FAC</u>	Prevalence Index worksheet:
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	Total % Cover of : _____ Multiply by: _____
4. _____	_____	_____	_____	OBL species _____ x1 = _____
5. _____	_____	_____	_____	FACW species _____ x2 = _____
50% = <u>2.5</u> , 20% = <u>1</u>	<u>5</u>	= Total Cover		FAC species <u>75</u> x3 = <u>225</u>
<u>Herb Stratum (Plot size: 5-ft radius)</u>				
1. <u><i>Elymus glaucus</i></u>	<u>100</u>	<u>yes</u>	<u>FACU</u>	FACU species <u>100</u> x4 = <u>400</u>
2. _____	_____	_____	_____	UPL species _____ x5 = _____
3. _____	_____	_____	_____	Column Totals: <u>175</u> (A) <u>625</u> (B)
4. _____	_____	_____	_____	Prevalence Index = B/A = <u>3.5</u>
5. _____	_____	_____	_____	Hydrophytic Vegetation Indicators:
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	<input checked="" type="checkbox"/> Dominance Test is >50%
8. _____	_____	_____	_____	<input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup>
50% = <u>50</u> , 20% = <u>20</u>	<u>100</u>	= Total Cover		<input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
<u>Woody Vine Stratum (Plot size: _____)</u>				
1. _____	_____	_____	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
2. _____	_____	_____	_____	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
50% = _____, 20% = _____	_____	= Total Cover		Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
% Bare Ground in Herb Stratum <u>0</u>	% Cover of Biotic Crust _____			
Remarks:				

**SOIL****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 <sup>1</sup>	Loc <sup>2</sup>		
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                   |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)               |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1)           |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)           |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C)    | <input type="checkbox"/> Depleted Matrix (F3)               |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D)            | <input checked="" type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7)         |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Depressions (F8)             |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Vernal Pools (F9)                  |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          |   |

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

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

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (Inches): \_\_\_\_\_

**Hydric Soils Present?**Yes ☐No ☒

Remarks: Soils not assessed due to ground disturbance requirements

**HYDROLOGY****Wetland Hydrology Indicators:**

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

- |  |  |
|--|--|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Salt Crust (B11)                              |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Biotic Crust (B12)                            |
| <input type="checkbox"/> Saturation (A3)                           | <input type="checkbox"/> Aquatic Invertebrates (B13)                   |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine)            | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                    |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)      | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine)         | <input type="checkbox"/> Presence of Reduced Iron (C4)                 |
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)    |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7)                        |
| <input type="checkbox"/> Water-Stained Leaves (B9)                 | <input type="checkbox"/> 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): \_\_\_\_\_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, monitoring well, aerial photos, previous inspections), if available:

Remarks:

US Army Corps of Engineers

Arid West – Version 2.0

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Lower Yakima River Coldwater Refugia Improvements City/County: Richland/Benton Sampling Date: 10/19/2022  
 Applicant/Owner: USACE State: WA Sampling Point: 11  
 Investigator(s): R. Tobias Section, Township, Range: Sec 24, T 09N, R 28E  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): concave Slope (%): 2  
 Subregion (LRR): LRR B Lat: 46.243098° Long: -119.261849° Datum: NAD 83  
 Soil Map Unit Name: Pasco silt loam, 0 to 2 percent slopes NWI classification: None  
 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="checkbox"/>	No <input type="checkbox"/>	<b>Is the Sampled Area within a Wetland?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Remarks:			

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30-ft radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1. <u><i>Elaeagnus angustifolia</i></u>	<u>100</u>	<u>yes</u>	<u>FAC</u>	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</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
50% = <u>50</u> , 20% = <u>20</u>	<u>100</u>	= Total Cover		<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <th style="text-align: left;">Total % Cover of :</th> <th style="text-align: left;">Multiply by:</th> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species <u>100</u></td> <td>x3 = <u>300</u></td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>300</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.0</u></td> </tr> </table> <b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	Total % Cover of :	Multiply by:	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species <u>100</u>	x3 = <u>300</u>	FACU species _____	x4 = _____	UPL species _____	x5 = _____	Column Totals: <u>100</u> (A)	<u>300</u> (B)	Prevalence Index = B/A = <u>3.0</u>	
Total % Cover of :	Multiply by:																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species <u>100</u>	x3 = <u>300</u>																			
FACU species _____	x4 = _____																			
UPL species _____	x5 = _____																			
Column Totals: <u>100</u> (A)	<u>300</u> (B)																			
Prevalence Index = B/A = <u>3.0</u>																				
<b>Sapling/Shrub Stratum (Plot size: 15-ft radius)</b> 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 50% = _____, 20% = _____ _____ = Total Cover																				
<b>Herb Stratum (Plot size: 5-ft radius)</b> 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 50% = _____, 20% = _____ _____ = Total Cover																				
<b>Woody Vine Stratum (Plot size: _____)</b> 1. _____ 2. _____ 50% = _____, 20% = _____ _____ = Total Cover % Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____																				
Remarks:																				

**SOIL****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 <sup>1</sup>	Loc <sup>2</sup>		
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                   |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)               |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1)           |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)           |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C)    | <input type="checkbox"/> Depleted Matrix (F3)               |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D)            | <input checked="" type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7)         |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Depressions (F8)             |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Vernal Pools (F9)                  |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          |   |

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

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

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (Inches): \_\_\_\_\_

**Hydric Soils Present?**Yes ☐ No ☒

Remarks: Soils not assessed due to ground disturbance requirements

**HYDROLOGY****Wetland Hydrology Indicators:**

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

- |  |  |
|--|--|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Salt Crust (B11)                              |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Biotic Crust (B12)                            |
| <input type="checkbox"/> Saturation (A3)                           | <input type="checkbox"/> Aquatic Invertebrates (B13)                   |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine)            | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                    |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)      | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine)         | <input type="checkbox"/> Presence of Reduced Iron (C4)                 |
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)    |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7)                        |
| <input type="checkbox"/> Water-Stained Leaves (B9)                 | <input type="checkbox"/> 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): \_\_\_\_\_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, monitoring well, aerial photos, previous inspections), if available:

Remarks:

US Army Corps of Engineers

Arid West – Version 2.0

# WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Lower Yakima River Coldwater Refugia Improvements City/County: Richland/Benton Sampling Date: 10/19/2022  
 Applicant/Owner: USACE State: WA Sampling Point: 12  
 Investigator(s): R. Tobias Section, Township, Range: Sec 24, T 09N, R 28E  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): concave Slope (%): 3  
 Subregion (LRR): LRR B Lat: 46.24599° Long: -119.261151° Datum: NAD 83  
 Soil Map Unit Name: Pasco silt loam, 0 to 2 percent slopes NWI classification: PFO1A  
 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="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks:			

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30-ft radius)	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</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>100</u> (A/B)																								
1. _____	_____	_____	_____																									
2. _____	_____	_____	_____																									
3. _____	_____	_____	_____																									
4. _____	_____	_____	_____																									
50% = _____, 20% = _____	_____	= Total Cover																										
<b>Sapling/Shrub Stratum (Plot size: 15-ft radius)</b>																												
1. <u>Elaeagnus angustifolia</u>	<u>25</u>	<u>yes</u>	<u>FAC</u>	<b>Prevalence Index worksheet:</b>  <table border="0"> <tr> <td colspan="2"><u>Total % Cover of :</u></td> <td><u>Multiply by:</u></td> </tr> <tr> <td>OBL species</td> <td>_____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species</td> <td><u>20</u></td> <td>x2 = <u>40</u></td> </tr> <tr> <td>FAC species</td> <td><u>90</u></td> <td>x3 = <u>270</u></td> </tr> <tr> <td>FACU species</td> <td><u>10</u></td> <td>x4 = <u>40</u></td> </tr> <tr> <td>UPL species</td> <td>_____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals:</td> <td><u>120</u> (A)</td> <td><u>350</u> (B)</td> </tr> <tr> <td colspan="3">Prevalence Index = B/A = <u>2.9</u></td> </tr> </table>	<u>Total % Cover of :</u>		<u>Multiply by:</u>	OBL species	_____	x1 = _____	FACW species	<u>20</u>	x2 = <u>40</u>	FAC species	<u>90</u>	x3 = <u>270</u>	FACU species	<u>10</u>	x4 = <u>40</u>	UPL species	_____	x5 = _____	Column Totals:	<u>120</u> (A)	<u>350</u> (B)	Prevalence Index = B/A = <u>2.9</u>		
<u>Total % Cover of :</u>		<u>Multiply by:</u>																										
OBL species	_____	x1 = _____																										
FACW species	<u>20</u>	x2 = <u>40</u>																										
FAC species	<u>90</u>	x3 = <u>270</u>																										
FACU species	<u>10</u>	x4 = <u>40</u>																										
UPL species	_____	x5 = _____																										
Column Totals:	<u>120</u> (A)	<u>350</u> (B)																										
Prevalence Index = B/A = <u>2.9</u>																												
2. _____	_____	_____	_____																									
3. _____	_____	_____	_____																									
4. _____	_____	_____	_____																									
5. _____	_____	_____	_____																									
50% = <u>12.5</u> , 20% = <u>5</u>	<u>25</u>	= Total Cover																										
<b>Herb Stratum (Plot size: 5-ft radius)</b>																												
1. <u>Elymus canadensis</u>	<u>65</u>	<u>yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																								
2. <u>Phalaris arundinacea</u>	<u>20</u>	<u>yes</u>	<u>FACW</u>																									
3. <u>Amaranthus albus</u>	<u>10</u>	<u>no</u>	<u>FACU</u>																									
4. _____	_____	_____	_____																									
5. _____	_____	_____	_____																									
6. _____	_____	_____	_____																									
7. _____	_____	_____	_____																									
8. _____	_____	_____	_____																									
50% = <u>47.5</u> , 20% = <u>19</u>	<u>95</u>	= Total Cover																										
<b>Woody Vine Stratum (Plot size: _____)</b>																												
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																								
2. _____	_____	_____	_____																									
50% = _____, 20% = _____	_____	= Total Cover																										
% Bare Ground in Herb Stratum <u>5</u>	% Cover of Biotic Crust _____																											
Remarks:																												

**SOIL**Sampling Point: 12**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 <sup>1</sup>	Loc <sup>2</sup>		
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                         | <input type="checkbox"/> Sandy Redox (S5)                   |
| <input type="checkbox"/> Histic Epipedon (A2)                  | <input type="checkbox"/> Stripped Matrix (S6)               |
| <input type="checkbox"/> Black Histic (A3)                     | <input type="checkbox"/> Loamy Mucky Mineral (F1)           |
| <input type="checkbox"/> Hydrogen Sulfide (A4)                 | <input type="checkbox"/> Loamy Gleyed Matrix (F2)           |
| <input type="checkbox"/> Stratified Layers (A5) <b>(LRR C)</b> | <input type="checkbox"/> Depleted Matrix (F3)               |
| <input type="checkbox"/> 1 cm Muck (A9) <b>(LRR D)</b>         | <input checked="" type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11)     | <input type="checkbox"/> Depleted Dark Surface (F7)         |
| <input type="checkbox"/> Thick Dark Surface (A12)              | <input type="checkbox"/> Redox Depressions (F8)             |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)              | <input type="checkbox"/> Vernal Pools (F9)                  |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)              |   |

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

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

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (Inches): \_\_\_\_\_

**Hydric Soils Present?**Yes ☐ No ☒

Remarks: Soils not assessed due to ground disturbance requirements

**HYDROLOGY****Wetland Hydrology Indicators:**

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

- |  |  |
|--|--|
| <input type="checkbox"/> Surface Water (A1)                          | <input type="checkbox"/> Salt Crust (B11)                              |
| <input type="checkbox"/> High Water Table (A2)                       | <input type="checkbox"/> Biotic Crust (B12)                            |
| <input type="checkbox"/> Saturation (A3)                             | <input type="checkbox"/> Aquatic Invertebrates (B13)                   |
| <input type="checkbox"/> Water Marks (B1) <b>(Nonriverine)</b>       | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                    |
| <input type="checkbox"/> Sediment Deposits (B2) <b>(Nonriverine)</b> | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) <b>(Nonriverine)</b>    | <input type="checkbox"/> Presence of Reduced Iron (C4)                 |
| <input type="checkbox"/> Surface Soil Cracks (B6)                    | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)    |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)   | <input type="checkbox"/> Thin Muck Surface (C7)                        |
| <input type="checkbox"/> Water-Stained Leaves (B9)                   | <input type="checkbox"/> 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): \_\_\_\_\_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, monitoring well, aerial photos, previous inspections), if available:

Remarks: Swale-like depression, no evidence of flow. Partially filled with mulch.

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# WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Lower Yakima River Coldwater Refugia Improvements City/County: Richland/Benton Sampling Date: 10/19/2022  
 Applicant/Owner: USACE State: WA Sampling Point: 13  
 Investigator(s): R. Tobias Section, Township, Range: Sec 24, T 09N, R 28E  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0  
 Subregion (LRR): LRR B Lat: 46.244894° Long: -119.261038° Datum: NAD 83  
 Soil Map Unit Name: Pasco silt loam, 0 to 2 percent slopes NWI classification: PEM1/FO1A  
 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="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks:		

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30-ft radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u><i>Elaeagnus angustifolia</i></u>	<u>95</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
4. _____	_____	_____	_____	
50% = <u>47.5</u> , 20% = <u>19</u>	<u>95</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15-ft radius)				Prevalence Index worksheet:
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	OBL species _____ x1 = _____
3. _____	_____	_____	_____	FACW species _____ x2 = _____
4. _____	_____	_____	_____	FAC species <u>95</u> x3 = <u>285</u>
5. _____	_____	_____	_____	FACU species <u>65</u> x4 = <u>260</u>
50% = _____, 20% = _____	_____	= Total Cover		UPL species _____ x5 = _____
Herb Stratum (Plot size: 5-ft radius)				Column Totals: <u>160</u> (A) <u>545</u> (B)
1. <u><i>Elymus glaucus</i></u>	<u>65</u>	<u>yes</u>	<u>FACU</u>	Prevalence Index = B/A = <u>3.4</u>
2. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
50% = <u>32.5</u> , 20% = <u>13</u>	<u>65</u>	= Total Cover		
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
50% = _____, 20% = _____	_____	= Total Cover		
% Bare Ground in Herb Stratum <u>35</u>	% Cover of Biotic Crust _____			
Remarks:				

**SOIL****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 <sup>1</sup>	Loc <sup>2</sup>		
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                   |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)               |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1)           |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)           |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C)    | <input type="checkbox"/> Depleted Matrix (F3)               |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D)            | <input checked="" type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7)         |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Depressions (F8)             |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Vernal Pools (F9)                  |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          |   |

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

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

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (Inches): \_\_\_\_\_

**Hydric Soils Present?**Yes ☐No ☒

Remarks: Soils not assessed due to ground disturbance requirements

**HYDROLOGY****Wetland Hydrology Indicators:**

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

- |  |  |
|--|--|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Salt Crust (B11)                              |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Biotic Crust (B12)                            |
| <input type="checkbox"/> Saturation (A3)                           | <input type="checkbox"/> Aquatic Invertebrates (B13)                   |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine)            | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                    |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)      | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine)         | <input type="checkbox"/> Presence of Reduced Iron (C4)                 |
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)    |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7)                        |
| <input type="checkbox"/> Water-Stained Leaves (B9)                 | <input type="checkbox"/> 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): \_\_\_\_\_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, monitoring well, aerial photos, previous inspections), if available:

Remarks:

US Army Corps of Engineers

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# WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Lower Yakima River Coldwater Refugia Improvements City/County: Richland/Benton Sampling Date: 10/19/2022  
 Applicant/Owner: USACE State: WA Sampling Point: 14  
 Investigator(s): R. Tobias Section, Township, Range: Sec 24, T 09N, R 28E  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 3  
 Subregion (LRR): LRR B Lat: 46.244159° Long: -119.261314° Datum: NAD 83  
 Soil Map Unit Name: Pasco silt loam, 0 to 2 percent slopes NWI classification: PFO1A  
 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="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks:			

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30-ft radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u><i>Elaeagnus angustifolia</i></u>	<u>40</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67</u> (A/B)
4. _____	_____	_____	_____	
50% = <u>20</u> , 20% = <u>8</u>	<u>40</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15-ft radius)				Prevalence Index worksheet:
1. <u><i>Elaeagnus angustifolia</i></u>	<u>25</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	Total % Cover of : _____ Multiply by: _____
3. _____	_____	_____	_____	OBL species _____ x1 = _____
4. _____	_____	_____	_____	FACW species <u>60</u> x2 = <u>120</u>
5. _____	_____	_____	_____	FAC species <u>65</u> x3 = <u>195</u>
50% = <u>12.5</u> , 20% = <u>5</u>	<u>25</u>	= Total Cover		FACU species <u>30</u> x4 = <u>120</u>
Herb Stratum (Plot size: 5-ft radius)				UPL species _____ x5 = _____
1. <u><i>Phalaris arundinacea</i></u>	<u>60</u>	<u>yes</u>	<u>FACW</u>	Column Totals: <u>155</u> (A) <u>435</u> (B)
2. <u><i>Amaranthus albus</i></u>	<u>20</u>	<u>yes</u>	<u>FACU</u>	Prevalence Index = B/A = <u>2.8</u>
3. <u><i>Lactuca serriola</i></u>	<u>10</u>	<u>no</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators:
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	<input checked="" type="checkbox"/> Dominance Test is >50%
6. _____	_____	_____	_____	<input checked="" type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup>
7. _____	_____	_____	_____	<input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
8. _____	_____	_____	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
50% = <u>45</u> , 20% = <u>18</u>	<u>90</u>	= Total Cover		<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
50% = _____, 20% = _____	_____	= Total Cover		
% Bare Ground in Herb Stratum <u>10</u>	% Cover of Biotic Crust _____			
Remarks:				

**SOIL****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 <sup>1</sup>	Loc <sup>2</sup>		
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                   |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)               |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1)           |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)           |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C)    | <input type="checkbox"/> Depleted Matrix (F3)               |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D)            | <input checked="" type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7)         |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Depressions (F8)             |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Vernal Pools (F9)                  |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          |   |

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

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

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (Inches): \_\_\_\_\_

**Hydric Soils Present?**Yes ☐No ☒

Remarks: Soils not assessed due to ground disturbance requirements

**HYDROLOGY****Wetland Hydrology Indicators:**

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

- |  |  |
|--|--|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Salt Crust (B11)                              |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Biotic Crust (B12)                            |
| <input type="checkbox"/> Saturation (A3)                           | <input type="checkbox"/> Aquatic Invertebrates (B13)                   |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine)            | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                    |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)      | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine)         | <input type="checkbox"/> Presence of Reduced Iron (C4)                 |
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)    |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7)                        |
| <input type="checkbox"/> Water-Stained Leaves (B9)                 | <input type="checkbox"/> 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): \_\_\_\_\_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, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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# WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Lower Yakima River Coldwater Refugia Improvements City/County: Richland/Benton Sampling Date: 10/19/2022  
 Applicant/Owner: USACE State: WA Sampling Point: 15  
 Investigator(s): R. Tobias Section, Township, Range: Sec 24, T 09N, R 28E  
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 1  
 Subregion (LRR): LRR B Lat: 46.245231° Long: -119.261480° Datum: NAD 83  
 Soil Map Unit Name: Pasco silt loam, 0 to 2 percent slopes NWI classification: PEM1/FO1A

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

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30-ft radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:																
1. <u><i>Elaeagnus angustifolia</i></u>	<u>70</u>	<u>yes</u>	<u>FAC</u>	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</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
50% = <u>35</u> , 20% = <u>14</u>	<u>70</u>	= Total Cover		<b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <th style="text-align: left;">Total % Cover of :</th> <th style="text-align: left;">Multiply by:</th> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species <u>70</u></td> <td>x3 = <u>210</u></td> </tr> <tr> <td>FACU species <u>60</u></td> <td>x4 = <u>240</u></td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: <u>130</u> (A)</td> <td><u>450</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.46</u></td> </tr> </table>	Total % Cover of :	Multiply by:	OBL species _____	x1 = _____	FACW species _____	x2 = _____	FAC species <u>70</u>	x3 = <u>210</u>	FACU species <u>60</u>	x4 = <u>240</u>	UPL species _____	x5 = _____	Column Totals: <u>130</u> (A)	<u>450</u> (B)	Prevalence Index = B/A = <u>3.46</u>	
Total % Cover of :	Multiply by:																			
OBL species _____	x1 = _____																			
FACW species _____	x2 = _____																			
FAC species <u>70</u>	x3 = <u>210</u>																			
FACU species <u>60</u>	x4 = <u>240</u>																			
UPL species _____	x5 = _____																			
Column Totals: <u>130</u> (A)	<u>450</u> (B)																			
Prevalence Index = B/A = <u>3.46</u>																				
<b>Sapling/Shrub Stratum (Plot size: 15-ft radius)</b> 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 50% = _____, 20% = _____ _____ = Total Cover																				
<b>Herb Stratum (Plot size: 5-ft radius)</b> 1. <u><i>Elymus glaucus</i></u> <u>60</u> <u>yes</u> <u>FACU</u> 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 50% = <u>30</u> , 20% = <u>12</u> <u>60</u> = Total Cover																				
<b>Woody Vine Stratum (Plot size: _____)</b> 1. _____ 2. _____ 50% = _____, 20% = _____ _____ = Total Cover % Bare Ground in Herb Stratum <u>30</u> % Cover of Biotic Crust _____																				
Remarks:																				

**Hydrophytic Vegetation Indicators:**

☒ Dominance Test is >50%

☐ Prevalence Index is ≤3.0<sup>1</sup>

☐ Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

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

**Hydrophytic Vegetation Present?** Yes ☐ No ☒

**SOIL**Sampling Point: 15**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 <sup>1</sup>	Loc <sup>2</sup>		
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

<sup>1</sup>Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                         | <input type="checkbox"/> Sandy Redox (S5)                   |
| <input type="checkbox"/> Histic Epipedon (A2)                  | <input type="checkbox"/> Stripped Matrix (S6)               |
| <input type="checkbox"/> Black Histic (A3)                     | <input type="checkbox"/> Loamy Mucky Mineral (F1)           |
| <input type="checkbox"/> Hydrogen Sulfide (A4)                 | <input type="checkbox"/> Loamy Gleyed Matrix (F2)           |
| <input type="checkbox"/> Stratified Layers (A5) <b>(LRR C)</b> | <input type="checkbox"/> Depleted Matrix (F3)               |
| <input type="checkbox"/> 1 cm Muck (A9) <b>(LRR D)</b>         | <input checked="" type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11)     | <input type="checkbox"/> Depleted Dark Surface (F7)         |
| <input type="checkbox"/> Thick Dark Surface (A12)              | <input type="checkbox"/> Redox Depressions (F8)             |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)              | <input type="checkbox"/> Vernal Pools (F9)                  |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)              |   |

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

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

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (Inches): \_\_\_\_\_

**Hydric Soils Present?**Yes ☐ No ☒

Remarks: Soils not assessed due to ground disturbance requirements

**HYDROLOGY****Wetland Hydrology Indicators:**

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

Secondary Indicators (2 or more required)

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> Surface Water (A1)                          | <input type="checkbox"/> Salt Crust (B11)                              | <input type="checkbox"/> Water Marks (B1) <b>(Riverine)</b>        |
| <input type="checkbox"/> High Water Table (A2)                       | <input type="checkbox"/> Biotic Crust (B12)                            | <input type="checkbox"/> Sediment Deposits (B2) <b>(Riverine)</b>  |
| <input type="checkbox"/> Saturation (A3)                             | <input type="checkbox"/> Aquatic Invertebrates (B13)                   | <input type="checkbox"/> Drift Deposits (B3) <b>(Riverine)</b>     |
| <input type="checkbox"/> Water Marks (B1) <b>(Nonriverine)</b>       | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                    | <input type="checkbox"/> Drainage Patterns (B10)                   |
| <input type="checkbox"/> Sediment Deposits (B2) <b>(Nonriverine)</b> | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2)               |
| <input type="checkbox"/> Drift Deposits (B3) <b>(Nonriverine)</b>    | <input type="checkbox"/> Presence of Reduced Iron (C4)                 | <input type="checkbox"/> Crayfish Burrows (C8)                     |
| <input type="checkbox"/> Surface Soil Cracks (B6)                    | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)    | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)   | <input type="checkbox"/> Thin Muck Surface (C7)                        | <input type="checkbox"/> Shallow Aquitard (D3)                     |
| <input type="checkbox"/> Water-Stained Leaves (B9)                   | <input type="checkbox"/> Other (Explain in Remarks)                    | <input type="checkbox"/> 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, monitoring well, aerial photos, previous inspections), if available:

Remarks:

US Army Corps of Engineers

Arid West – Version 2.0





## **APPENDIX D**

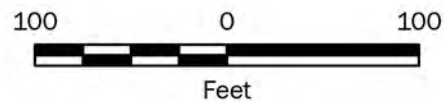
### **Wetland Rating Forms**

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#### Legend

-  Scrub-Shrub
-  150-ft Boundary



#### Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source:

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

#### Wetland A - Cowardin Classes

Lower Yakima River Coldwater Refugia Improvements  
Richland, Washington



Figure 1



\\geoengineers.com\WAN\Projects\0\0371239\_GIS\0371239\_Project.aprx\0371239\_Project.aprx Date Exported: 07/20/22 by lbaldwin



#### Legend

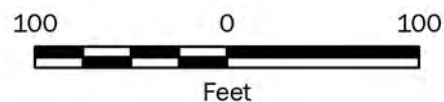
- Outlet
- Stream
- Wetland Unit

#### Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source:

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet



#### Wetland A - Hydroperiods

Lower Yakima River Coldwater Refugia Improvements  
Richland, Washington





Figure 12



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#### Legend

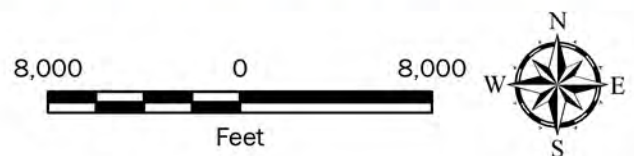
-  Wetland
-  150-ft Boundary

#### Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source:

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet



#### Wetland A - Contributing Basin

Lower Yakima River Coldwater Refugia Improvements  
Richland, Washington







Figure 3



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#### Legend

-  Wetland
-  1-km Polygon
-  Accessible low/moderate
-  Inaccessible low/moderate

#### Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source:

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet



#### Wetland A - Habitat

Lower Yakima River Coldwater Refugia Improvements  
Richland, Washington



Figure 4





Legend

Filter

Zoom

Tools

Home

Add/Remove Map Data

My Maps

Print

Share

About

Assessed Water/Sediment

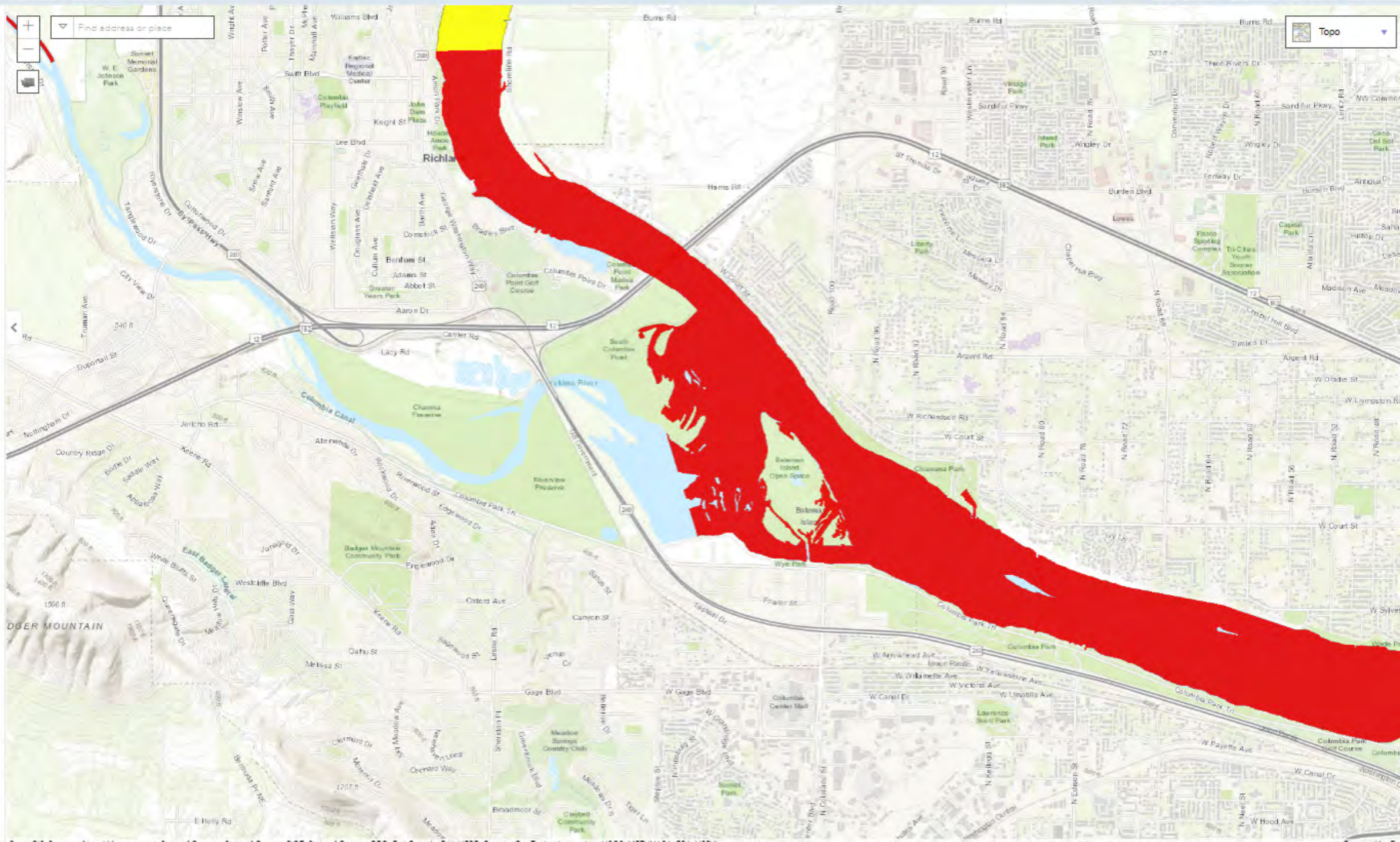
Filter

## Water

- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1

## Sediment

- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1





[Ecology homepage](#) > [Water & Shorelines](#) > [Water improvement](#) > [Total Maximum Daily Load process](#) > [Directory of projects](#) > [Benton County](#)

## Water quality improvement projects

Select the waterbody or pollutant name to find more information about the specific project.

Waterbody Name(s)	Pollutant(s)	Status	Project Lead(s)
<a href="#">Yakima River</a>	Toxics	Under development	<a href="#">Jane Creech</a> 509-454-7860  <a href="#">Mark Peterschmidt</a> 509-454-7843
<a href="#">Yakima River, Lower</a>	Turbidity	EPA approved	<a href="#">Jane Creech</a> 509-454-7860

To request ADA accommodation, call Ecology at 360-407-7668, 711 (relay service), or 877-833-6341 (TTY). More about our [accessibility services](#).



RATING SUMMARY – Eastern Washington

Name of wetland (or ID #):   Wetland A   Date of site visit:   5/10/2022  

Rated by   L Baldwin   Trained by Ecology? ☒ Yes ☐ No Date of training   Oct-18  

HGM Class used for rating   Depressional   Wetland has multiple HGM classes? ☒ Yes ☐ No

NOTE: Form is not complete with out the figures requested (figures can be combined).  
Source of base aerial photo/map   ESRI basemap  

OVERALL WETLAND CATEGORY   III   (based on functions ☒ or special characteristics ☐ )

1. Category of wetland based on FUNCTIONS

- Category I - Total score = 22 - 27
- Category II - Total score = 19 - 21
- X

Category III - Total score = 16 - 18
- Category IV - Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
List appropriate rating (H, M, L)				
Site Potential	M	L	L	
Landscape Potential	M	M	M	
Value	H	M	H	Total
Score Based on Ratings	7	5	6	18

Score for each function based on three ratings  
(order of ratings is not important)

9 = H, H, H

8 = H, H, M

7 = H, H, L

7 = H, M, M

6 = H, M, L

6 = M, M, M

5 = H, L, L

5 = M, M, L

4 = M, L, L

3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	Category
Vernal Pools	
Alkali	
Wetland of High Conservation Value	
Bog and Calcareous Fens	
Old Growth or Mature Forest - slow growing	
Aspen Forest	
Old Growth or Mature Forest - fast growing	
Floodplain forest	
None of the above	X

## Maps and Figures required to answer questions correctly for Eastern Washington

### Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	D 1.3, H 1.1, H 1.5	1
Hydroperiods (including area of open water for H 1.3)	D 1.4, H 1.2, H 1.3	2
Location of outlet ( <i>can be added to map of hydroperiods</i> )	D 1.1, D 4.1	2
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	D 2.2, D 5.2	1
Map of the contributing basin	D 5.3	3
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	4
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	5
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	D 3.3	6

### Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	
Hydroperiods	H 1.2, H 1.3	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	R 2.4	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of wetland vs. width of stream ( <i>can be added to another figure</i> )	R 4.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	R 3.2, R 3.3	

### Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	L 1.1, L 4.1, H 1.1, H 1.5	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	L 3.3	

### Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	
Hydroperiods	H 1.2, H 1.3	
Plant cover of <b>dense</b> trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of <b>dense, rigid</b> trees, shrubs, and herbaceous plants ( <i>can be added to figure above</i> )	S 4.1	
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	S 3.3	

## HGM Classification of Wetland in Eastern Washington

For questions 1 - 4, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1 - 4 apply, and go to Question 5.

1. Does the entire unit **meet both** of the following criteria?

- ☐ The vegetated part of the wetland is on the water side of the Ordinary High Water Mark of a body of permanent open water (without any plants on the surface) that is at least 20 ac (8 ha) in size
- ☐ At least 30% of the open water area is deeper than 10 ft (3 m)
- ☒ NO - go to 2
- ☐ **YES** - The wetland class is **Lake Fringe** (Lacustrine Fringe)

2. Does the entire wetland unit meet all of the following criteria?

- ☐ The wetland is on a slope (*slope can be very gradual*),
- ☐ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks;
- ☐ The water leaves the wetland **without being impounded**.
- ☒ NO - go to 3
- ☐ **YES** - The wetland class is **Slope**

**NOTE:** Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).

3. Does the entire wetland unit **meet all** of the following criteria?

- ☒ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river
- ☒ The overbank flooding occurs at least once every 10 years.
- ☐ NO - go to 4
- ☒ **YES** - The wetland class is **Riverine**

**NOTE:** The Riverine wetland can contain depressions that are filled with water when the river is not flooding.

4. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

- ☐ NO - go to 5
- ☒ **YES** - The wetland class is **Depressional**

5. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1 - 4 APPLY TO DIFFERENT AREAS IN THE WETLAND UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

**NOTE:** Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM Class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine ( the riverine portion is within the boundary of depression)	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine

*If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.*

NOTES and FIELD OBSERVATIONS:

<b>DEPRESSIONAL WETLANDS</b>		Points (only 1 score per box)
<b>Water Quality Functions</b> - Indicators that the site functions to improve water quality		
D 1.0. Does the site have the potential to improve water quality?		
D 1.1. <u>Characteristics of surface water outflows from the wetland:</u>		
Wetland has no surface water outlet	points = 5	3
<input type="checkbox"/> Wetland has an intermittently flowing outlet	points = 3	
<input checked="" type="checkbox"/> Wetland has a highly constricted permanently flowing outlet	points = 3	
Wetland has a permanently flowing, unconstricted, surface outlet	points = 1	
D 1.2. <u>The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions of soils)</u>		
	Yes = 3      No = 0	0
D 1.3. <u>Characteristics of persistent vegetation</u> (Emergent, Scrub-shrub, and/or Forested Cowardin classes)		
Wetland has persistent, ungrazed, vegetation for $> \frac{2}{3}$ of area	points = 5	5
Wetland has persistent, ungrazed, vegetation from $\frac{1}{3}$ to $\frac{2}{3}$ of area	points = 3	
Wetland has persistent, ungrazed vegetation from $\frac{1}{10}$ to $< \frac{1}{3}$ of area	points = 1	
Wetland has persistent, ungrazed vegetation $< \frac{1}{10}$ of area	points = 0	
D 1.4. <u>Characteristics of seasonal ponding or inundation:</u>		
<i>This is the area of ponding that fluctuates every year. Do not count the area that is permanently ponded.</i>		
Area seasonally ponded is $> \frac{1}{2}$ total area of wetland	points = 3	1
Area seasonally ponded is $\frac{1}{4}$ - $\frac{1}{2}$ total area of wetland	points = 1	
Area seasonally ponded is $< \frac{1}{4}$ total area of wetland	points = 0	
Total for D 1	Add the points in the boxes above	<b>9</b>

**Rating of Site Potential** If score is: ☐ 12 - 16 = H ☒ 6 - 11 = M ☐ 0 - 5 = L Record the rating on the first page

D 2.0. Does the landscape have the potential to support the water quality function of the site?		
D 2.1. Does the wetland receive stormwater discharges?	Yes = 1    No = 0	1
D 2.2. Is $> 10\%$ of the area within 150 ft of the wetland in land uses that generate pollutants?	Yes = 1    No = 0	0
D 2.3. Are there septic systems within 250 ft of the wetland?	Yes = 1    No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1 - D 2.3?		1
Source <u>hikers with dogs, ungulates</u>	Yes = 1    No = 0	
Total for D 2	Add the points in the boxes above	<b>2</b>

**Rating of Landscape Potential** If score is: ☐ 3 or 4 = H ☒ 1 or 2 = M ☐ 0 = L Record the rating on the first page

D 3.0. Is the water quality improvement provided by the site valuable to society?		
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, or lake that is on the 303(d) list?	Yes = 1    No = 0	1
D 3.2. Is the wetland in a basin or sub-basin where water quality is an issue in some aquatic resource [303(d) list, eutrophic lakes, problems with nuisance and toxic algae]?	Yes = 1    No = 0	1
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (answer YES if there is a TMDL for the drainage or basin in which the wetland is found)?	Yes = 2    No = 0	2
Total for D 3	Add the points in the boxes above	<b>4</b>

**Rating of Value** If score is: ☒ 2 - 4 = H ☐ 1 = M ☐ 0 = L Record the rating on the first page

<b>DEPRESSIONAL WETLANDS</b>		Points (only 1 score per box)
<b>Hydrologic Functions</b> - Indicators that the site functions to reduce flooding and erosion		
D 4.0. Does the site have the potential to reduce flooding and erosion?		
D 4.1. <u>Characteristics of surface water outflows from the wetland:</u>		
Wetland has no surface water outlet	points = 8	4
<input type="checkbox"/> Wetland has an intermittently flowing outlet	points = 4	
<input checked="" type="checkbox"/> Wetland has a highly constricted permanently flowing outlet	points = 4	
Wetland has a permanently flowing unconstricted surface outlet	points = 0	
(If outlet is a ditch and not permanently flowing treat wetland as "intermittently flowing")		
D 4.2. <u>Depth of storage during wet periods: Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or deepest part (if dry).</u>		
Seasonal ponding: > 3 ft above the lowest point in wetland or the surface of permanent ponding	points = 8	0
Seasonal ponding: 2 ft - < 3 ft above the lowest point in wetland or the surface of permanent ponding	points = 6	
<input type="checkbox"/> The wetland is a headwater wetland	points = 4	
<input checked="" type="checkbox"/> Seasonal ponding: 1 ft - < 2 ft	points = 4	
Seasonal ponding: 6 in - < 1 ft	points = 2	
Seasonal ponding: < 6 in or wetland has only saturated soils	points = 0	
Total for D 4	Add the points in the boxes above	<b>4</b>


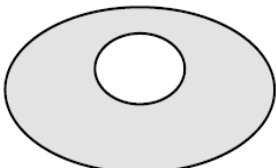

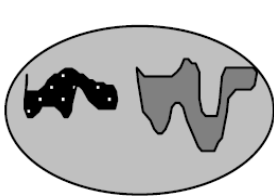

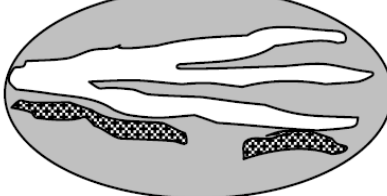
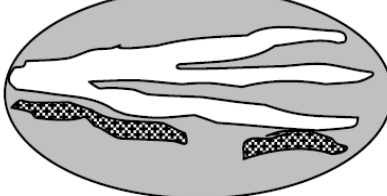
**Rating of Site Potential** If score is: ☐ 12 - 16 = H ☐ 6 - 11 = M ☒ 0 - 5 = L Record the rating on the first page

D 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
D 5.1. Does the wetland receive stormwater discharges?	Yes = 1    No = 0	1
D 5.2. Is > 10% of the area within 150 ft of the wetland in land uses that generates runoff?	Yes = 1    No = 0	0
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses ?	Yes = 1    No = 0	1
Total for D 5	Add the points in the boxes above	<b>2</b>

**Rating of Landscape Potential** If score is: ☐ 3 = H ☒ 1 or 2 = M ☐ 0 = L Record the rating on the first page

D 6.0. Are the hydrologic functions provided by the site valuable to society?		
D 6.1. <u>The wetland is in a landscape that has flooding problems.</u>		
Choose the description that best matches conditions around the wetland being rated. <i>Do not add points. Choose the highest score if more than one condition is met.</i>		
The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds), AND		1
Flooding occurs in sub-basin that is immediately down-gradient of wetland	points = 2	
Surface flooding problems are in a sub-basin farther down-gradient	points = 1	
<input type="checkbox"/> The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood.	points = 0	
<i>Explain why</i>		
<input type="checkbox"/> There are no problems with flooding downstream of the wetland	points = 0	
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?		
Yes = 2    No = 0		0
Total for D 6	Add the points in the boxes above	<b>1</b>

**Rating of Value** If score is: ☐ 2 - 4 = H ☒ 1 = M ☐ 0 = L Record the rating on the first page

These questions apply to wetlands of all HGM classes.		(only 1 score per box)
<b>HABITAT FUNCTIONS</b> - Indicators that site functions to provide important habitat		
H 1.0. Does the wetland have the potential to provide habitat for many species?		
H 1.1. Structure of plant community: <i>Check the Cowardin vegetation classes present and categories of emergent plants. Size threshold for each category is <math>\geq \frac{1}{4}</math> ac or <math>\geq 10\%</math> of the wetland if wetland is <math>&lt; 2.5</math> ac.</i>		0
<input type="checkbox"/> Aquatic bed <input type="checkbox"/> Emergent plants 0 - 12 in (0-30 cm) high are the highest layer and have $> 30\%$ cover <input type="checkbox"/> Emergent plants $> 12$ - 40 in ( $> 30$ -100 cm) high are the highest layer with $>30\%$ cover <input type="checkbox"/> Emergent plants $> 40$ in ( $> 100$ cm) high are the highest layer with $>30\%$ cover <input checked="" type="checkbox"/> Scrub-shrub (areas where shrubs have $> 30\%$ cover) <input type="checkbox"/> Forested (areas where trees have $> 30\%$ cover)		
4 or more checks: points = 3 3 checks: points = 2 2 checks: points = 1 1 check: points = 0		
H 1.2. Is one of the vegetation types Aquatic Bed? <span style="float: right;">Yes = 1    No = 0</span>		
H 1.3. <u>Surface water</u> H 1.3.1. Does the wetland have areas of open water (without emergent or shrub plants) over at least $\frac{1}{4}$ ac <b>OR</b> 10% of its area during the March to early June <b>OR</b> in August to the end of September? <i>Answer YES for Lake Fringe wetlands.</i> <div style="text-align: right;"><input type="checkbox"/> Yes = 3 points &amp; go to H 1.4    No = go to H 1.3.2</div> H 1.3.2. Does the wetland have an intermittent or permanent, and unvegetated stream within its boundaries, or along one side, over at least $\frac{1}{4}$ ac or 10% of its area? <i>Answer yes only if H 1.3.1 is No.</i> <div style="text-align: right;"><input checked="" type="checkbox"/> Yes = 3    No = 0</div>		
H 1.4. <u>Richness of plant species</u> Count the number of plant species in the wetland that cover at least 10 ft <sup>2</sup> . <i>Different patches of the same species can be combined to meet the size threshold. You do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Russian olive, Phragmites, Canadian thistle, yellow-flag iris, and saltcedar (Tamarisk)</i> # of species <u>                    </u> <div style="text-align: right;">Scoring: <math>&gt; 9</math> species: points = 2              4 - 9 species: points = 1  <math>&lt; 4</math> species: points = 0</div>		
H 1.4. <u>Interspersion of habitats</u> Decide from the diagrams below whether interspersions among types of plant structures (described in H 1.1), and unvegetated areas (open water or mudflats) is high, moderate, low, or none. <i>Use map of Cowardin and emergent plant classes prepared for questions H 1.1 and map of open water from H 1.3. If you have four or more plant classes or three classes and open water, the rating is always high.</i>		0
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p><b>None</b> = 0 points</p> </div> <div style="text-align: center;">  <p><b>Low</b> = 1 point</p> </div> <div style="text-align: center;">  <p><b>Moderate</b> = 2 points</p> </div> </div>		
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <p>All three diagrams in this row are <b>HIGH</b> = 3 points</p>		
 <p>Riparian braided channels with 2 classes</p>		



<b>H 1.6. Special habitat features:</b> <i>Check the habitat features that are present in the wetland. The number of checks is the number of</i>			
<input checked="" type="checkbox"/> Loose rocks larger than 4 in OR large, downed, woody debris (> 4 in diameter) within the area of surface ponding or in stream. <input type="checkbox"/> Cattails or bulrushes are present within the wetland. <input type="checkbox"/> Standing snags (diameter at the bottom > 4 in) in the wetland or within 30 m (100 ft) of the edge <input type="checkbox"/> Emergent or shrub vegetation in areas that are permanently inundated/ponded. <input checked="" type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 45 degree slope) OR signs of recent beaver activity <input type="checkbox"/> Invasive species cover less than 20% in each stratum of vegetation ( <i>canopy, sub-canopy, shrubs, herbaceous, moss/ground cover</i> )		2	
<b>Total for H 1</b>		<b>Add the points in the boxes above</b>	<b>6</b>

**Rating of Site Potential** If Score is: ☐ 15 - 18 = H ☐ 7 - 14 = M ☒ 0 - 6 = L Record the rating on the first page

<b>H 2.0. Does the landscape have the potential to support habitat functions of the site?</b>			
<b>H 2.1 Accessible habitat (only area of habitat abutting wetland). If total accessible habitat is:</b> <i>Calculate:</i> 0 % undisturbed habitat + ( 46 % moderate & low intensity land uses / 2 ) = 23%  > 1/3 (33.3%) of 1 km Polygon points = 3 20 - 33% of 1 km Polygon points = 2 10 - 19% of 1 km Polygon points = 1 < 10 % of 1 km Polygon points = 0		2	
<b>H 2.2. Undisturbed habitat in 1 km Polygon around wetland.</b> <i>Calculate:</i> 0 % undisturbed habitat + ( 66 % moderate & low intensity land uses / 2 ) = 33%  Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10 - 50% and in 1 - 3 patches points = 2 Undisturbed habitat 10 - 50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0		1	
<b>H 2.3 Land use intensity in 1 km Polygon:</b> > 50% of 1 km Polygon is high intensity land use points = (-2) Does not meet criterion above points = 0		0	
<b>H 2.4. The wetland is in an area where annual rainfall is less than 12 in, and its water regime is not influenced by irrigation practices, dams, or water control structures. <i>Generally, this means outside boundaries of reclamation areas, irrigation districts, or reservoirs</i></b>		0	
<b>Total for H 2</b>		<b>Add the points in the boxes above</b>	<b>3</b>

**Rating of Landscape Potential** If Score is: ☐ 4 - 9 = H ☒ 1 - 3 = M ☐ < 1 = L Record the rating on the first page

<b>H 3.0. Is the habitat provided by the site valuable to society?</b>		
<b>H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? <i>Choose only the highest score that applies to the wetland being rated.</i></b>		
Site meets ANY of the following criteria: points = 2 <input checked="" type="checkbox"/> It has 3 or more priority habitats within 100 m (see Appendix B) <input type="checkbox"/> It provides habitat for Threatened or Endangered species (any plant or animal on state or federal lists) <input type="checkbox"/> It is mapped as a location for an individual WDFW species <input type="checkbox"/> It is a Wetland of High Conservation Value as determined by the Department of Natural Resources <input type="checkbox"/> It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan		2
Site has 1 or 2 priority habitats within 100 m (see Appendix B) points = 1 Site does not meet any of the criteria above points = 0		

**Rating of Value** If Score is: ☒ 2 = H ☐ 1 = M ☐ 0 = L Record the rating on the first page

## **CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS**

**Please determine if the wetland meets the attributes described below and circle the appropriate category.**

**NOTE: A wetland may meet the criteria for more than one set of special characteristics. Record all those that apply. NOTE: All wetlands should also be characterized based on their functions.**

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.</i>	
<b>SC 1.0. Vernal Pools</b> Is the wetland <b>less than 4000 ft<sup>2</sup></b> , and does it meet at least <b>two</b> of the following criteria? <input type="checkbox"/> Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input. <input type="checkbox"/> Wetland plants are typically present only in the spring; the summer vegetation is typically upland annuals. <i>If you find perennial, obligate, wetland plants, the wetland is probably NOT a vernal pool.</i> <input type="checkbox"/> The soil in the wetland is shallow [ $< 1$ ft (30 cm) deep] and is underlain by an impermeable layer such as basalt or clay. <input type="checkbox"/> Surface water is present for less than 120 days during the wet season. <div style="text-align: right; padding-right: 50px;"> <input type="checkbox"/> Yes - Go to <b>SC 1.1</b>      <input type="checkbox"/> No = <b>Not vernal pool</b> </div> SC 1.1. Is the vernal pool relatively undisturbed in February and March? <div style="text-align: right; padding-right: 50px;"> <input type="checkbox"/> Yes – Go to <b>SC 1.2</b>      <input checked="" type="checkbox"/> No = <b>Not a vernal pool with special characteristics</b> </div> SC 1.2. Is the vernal pool in an area where there are at least 3 separate aquatic resources within 0.5 mi (other wetlands, rivers, lakes etc.)? <div style="text-align: right; padding-right: 50px;"> <input type="checkbox"/> Yes = <b>Category II</b>      <input type="checkbox"/> No = <b>Category III</b> </div>	
<b>SC 2.0. Alkali wetlands</b> Does the wetland meet <b>one</b> of the following criteria? <input type="checkbox"/> The wetland has a conductivity $> 3.0$ mS/cm. <input type="checkbox"/> The wetland has a conductivity between 2.0 and 3.0 mS, and more than 50% of the plant cover in the wetland can be classified as “alkali” species (see Table 4 for list of plants found in alkali systems). <input type="checkbox"/> If the wetland is dry at the time of your field visit, the central part of the area is covered with a layer of salt. <b>OR</b> does the wetland unit meet two of the following three sub-criteria? <input type="checkbox"/> Salt encrustations around more than 75% of the edge of the wetland <input type="checkbox"/> More than $\frac{3}{4}$ of the plant cover consists of species listed on Table 4 <input type="checkbox"/> A pH above 9.0. All alkali wetlands have a high pH, but please note that some freshwater wetlands may also have a high pH. Thus, pH alone is not a good indicator of alkali wetlands. <div style="text-align: right; padding-right: 50px;"> <input type="checkbox"/> Yes = <b>Category I</b>      <input checked="" type="checkbox"/> No = <b>Not an alkali wetland</b> </div>	
<b>SC 3.0. Wetlands of High Conservation Value (WHCV)</b> SC 3.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? <div style="text-align: right; padding-right: 50px;"> <input checked="" type="checkbox"/> Yes - Go to <b>SC 3.2</b>      <input type="checkbox"/> No - Go to <b>SC 3.3</b> </div> SC 3.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? <div style="text-align: right; padding-right: 50px;"> <input type="checkbox"/> Yes = <b>Category I</b>      <input checked="" type="checkbox"/> No = <b>Not WHCV</b> </div> SC 3.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? <a href="http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf">http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf</a> <div style="text-align: right; padding-right: 50px;"> <input type="checkbox"/> Yes - <b>Contact WNHP/WDNR and to SC 3.4</b>      <input type="checkbox"/> No = <b>Not WHCV</b> </div> SC 3.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? <div style="text-align: right; padding-right: 50px;"> <input type="checkbox"/> Yes = <b>Category I</b>      <input type="checkbox"/> No = <b>Not WHCV</b> </div>	

<b>SC 4.0. Bogs and Calcareous Fens</b> <i>Does the wetland (or any part of the wetland unit) meet both the criteria for soils and vegetation in bogs or calcareous fens? Use the key below to identify if the wetland is a bog or calcareous fen. <b>If you answer yes you will still need to rate the wetland based on its functions.</b></i>	
SC 4.1. Does an area within the wetland have organic soil horizons (i.e., layers of organic soil), either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? <i>See Appendix C for a field key to identify organic soils.</i> <div style="text-align: right;"> <input type="checkbox"/> Yes - Go to <b>SC 4.3</b> <input checked="" type="checkbox"/> No - Go to <b>SC 4.2</b> </div>	
SC 4.2. Does an area within the wetland have organic soils, either peats or mucks, that are less than 16 in deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? <div style="text-align: right;"> <input type="checkbox"/> Yes - Go to <b>SC 4.3</b> <input checked="" type="checkbox"/> No = <b>Is not a bog for rating</b> </div>	
SC 4.3. Does an area within the wetland have more than 70% cover of mosses at ground level AND at least 30% of the total plant cover consists of species in Table 5? <div style="text-align: right;"> <input type="checkbox"/> Yes = <b>Category I bog</b> <input type="checkbox"/> No - Go to <b>SC 4.4</b> </div> <p><b>NOTE:</b> If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 5 are present, the wetland is a bog.</p>	
SC 4.4. Is an area with peats or mucks forested (> 30% cover) with subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 5 provide more than 30% of the cover under the canopy? <div style="text-align: right;"> <input type="checkbox"/> Yes = <b>Category I bog</b> <input type="checkbox"/> No - Go to <b>SC 4.5</b> </div>	
SC 4.5. Do the species listed in Table 6 comprise at least 20% of the total plant cover within an area of peats and mucks? <div style="text-align: right;"> <input type="checkbox"/> Yes = <b>Is a Calcareous Fen for purpose of rating</b> <input type="checkbox"/> No - Go to <b>SC 4.6</b> </div>	
SC 4.6. Do the species listed in Table 6 comprise at least 10% of the total plant cover in an area of peats and mucks, AND one of the two following conditions is met: <input type="checkbox"/> Marl deposits [calcium carbonate (CaCO <sub>3</sub> ) precipitate] occur on the soil surface or plant stems <input type="checkbox"/> The pH of free water is ≥ 6.8 AND electrical conductivity is ≥ 200 uS/cm at multiple locations within the wetland <div style="text-align: right;"> <input type="checkbox"/> Yes = <b>Is a Category I calcareous fen</b> <input checked="" type="checkbox"/> No = <b>Is not a calcareous fen</b> </div>	
<b>SC 5.0. Forested Wetlands</b> Does the wetland have an area of forest rooted within its boundary that meets <b>at least one</b> of the following three criteria? ( <i>Continue only if you have identified that a forested class is present in question</i> ) <div style="margin-left: 20px;"> <input checked="" type="checkbox"/> The wetland is within the 100 year floodplain of a river or stream  <input type="checkbox"/> Aspen (<i>Populus tremuloides</i>) represents at least 20% of the total cover of woody species  <input type="checkbox"/> There is at least ¼ ac of trees (even in wetlands smaller than 2.5 ac) that are “mature” or “old-growth” according to the definitions for these priority habitats developed by WDFW (see definitions in question H3.1)  <div style="text-align: right;"> <input type="checkbox"/> Yes - Go to <b>SC 5.1</b> <input checked="" type="checkbox"/> No = <b>Not a forested wetland with special characteristics</b> </div> </div>	
SC 5.1. Does the wetland have a forest canopy where more than 50% of the tree species (by cover) are slow growing native trees ( <i>see Table 7</i> )? <div style="text-align: right;"> <input type="checkbox"/> Yes = <b>Category I</b> <input type="checkbox"/> No - Go to <b>SC 5.2</b> </div>	
SC 5.2. Does the wetland have areas where aspen ( <i>Populus tremuloides</i> ) represents at least 20% of the total cover of woody species? <div style="text-align: right;"> <input type="checkbox"/> Yes = <b>Category I</b> <input type="checkbox"/> No - Go to <b>SC 5.3</b> </div>	
SC 5.3. Does the wetland have at least ¼ acre with a forest canopy where more than 50% of the tree species (by cover) are fast growing species ( <i>see Table 7</i> )? <div style="text-align: right;"> <input type="checkbox"/> Yes = <b>Category II</b> <input type="checkbox"/> No - Go to <b>SC 5.4</b> </div>	
SC 5.4. Is the forested component of the wetland within the 100 year floodplain of a river or stream? <div style="text-align: right;"> <input type="checkbox"/> Yes = <b>Category II</b> <input type="checkbox"/> No = <b>Not a forested wetland with special characteristics</b> </div>	
<b>Category of wetland based on Special Characteristics</b> <i>Choose the highest rating if wetland falls into several categories</i> If you answered No for all types, enter “Not Applicable” on Summary Form	

## Appendix B: WDFW Priority Habitats in Eastern Washington

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp.

<http://wdfw.wa.gov/publications/00165/wdfw00165.pdf> or access the list from here:  
<http://wdfw.wa.gov/conservation/phs/list/>

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: **NOTE**: *This question is independent of the land use between the wetland unit and the priority habitat.*

- ☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- ☒ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).
- ☐ **Old-growth/Mature forests:** Old-growth east of Cascade crest – Stands are highly variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. In general, stands will be >150 years of age, with 10 trees/ac (25 trees/ha) that are > 21 in (53 cm) dbh, and 1-3 snags/ac (2.5-7.5 snags/ha) that are > 12-14 in (30-35 cm) diameter. Downed logs may vary from abundant to absent. Canopies may be single or multi-layered. Evidence of human-caused alterations to the stand will be absent or so slight as to not affect the ecosystem's essential structures and functions. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west and 80-160 years old east of the Cascade crest.
- ☐ **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).
- ☒ **Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ☒ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- ☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- ☐ **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- ☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- ☐ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.
- ☐ **Shrub-steppe:** A nonforested vegetation type consisting of one or more layers of perennial bunchgrasses and a conspicuous but discontinuous layer of shrubs (see Eastside Steppe for sites with little or no shrub cover).
- ☐ **Eastside Steppe:** Nonforested vegetation type dominated by broadleaf herbaceous flora (i.e., forbs), perennial bunchgrasses, or a combination of both. Bluebunch wheatgrass (*Pseudoroegneria spicata*) is often the prevailing cover component along with Idaho fescue (*Festuca idahoensis*), Sandberg bluegrass (*Poa secunda*), rough fescue (*F. campestris*), or needlegrasses (*Achnatherum* spp.).
- ☐ **Juniper Savannah:** All juniper woodlands.

**Note:** All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.