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To: Arden Thomas, Kittitas County Public Works  
From: John Mulligan, Jacobs  
Date: March 25, 2021  
Subject: **Spring Creek Restoration and Culvert Removal - Aquatic Resources Summary**

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### PURPOSE

On December 10, 2019 Kittitas County (County) purchased parcel 508933 (731 Stone Rd., Ellensburg, WA) for the purposes of reducing flood risk and improving floodplain habitat. The property is approximately 160 acres and is located about 3,500 feet south of Ellensburg in Kittitas County, Washington State in Section 24, Township 17 North, Range 18 East Willamette Meridian, at 46.952243° N latitude, -120.530794° W longitude (Attachment A, Figure 1).

The Spring Creek Restoration Project (Project) will include ground disturbance to remove two existing culverts and associated farm access roads on Spring Creek, re-establishment of native woody vegetation and managing invasive and noxious species to restore approximately 18 acres of riparian habitat. A Spring Creek Restoration Plan has been developed that provides further detail and specifications. Site access will occur off of Stone Road along unimproved roads located on the parcel. Once culverts are removed, access to uplands west of the creek will occur along the northern extent of the parcel where there are no aquatic resources.

The purpose of this memorandum is to provide a summary of aquatic resource inventory efforts within the Project area (Attachment A, Figure 2). This memorandum will also describe mitigation efforts that have been incorporated into the Project design.

### METHODS

Jacobs biologists performed a background review of the following resources to gather information about environmental conditions.

- National Oceanic and Atmospheric Administration (NOAA) Regional Climate Centers precipitation data
- Natural Resources Conservation Service (NRCS) Web Soil Survey
- Statewide Integrated Fish Distribution (SWIFD) Web Map
- U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Wetlands Mapper
- U.S. Geological Survey National Hydrography Dataset (NHD)
- Washington Department of Fish and Wildlife (WDFW) SalmonScape map application
- WDFW Washington State Fish Passage map application
- Central Washington University 1954 aerial imagery

Jacobs biologists' John Mulligan and Jennifer Bader assessed existing conditions and delineated the boundaries of wetlands within the proposed Project area on August 19, 24 and 26, 2020. Portions of Kittitas County parcel number 508933 within 100 feet of the creek were assessed for wetland presence and delineated in accordance with the U.S. Army Corps of Engineers wetland determination protocol and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West*. This methodology uses the triple-parameter approach by evaluating vegetation types, soils indicators, and hydrology indicators.

Data was also collected to rate impacted wetlands using the *Washington State Wetland Rating System for Eastern Washington – 2014 Update*. This system categorizes wetlands from I to IV based on a composite scoring of landscape opportunity, potential for water quality function, hydrologic function, and habitat function.

Spring Creek was delineated approximately 100-feet upstream and downstream of the southern culvert location using methods described in the Corps of Engineers A guide to Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States and the Department of Ecology's Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State.

## EXISTING CONDITIONS

The property was used for grazing prior to 2019. The Project area consists of an approximate 18-acre riparian restoration area that includes remnant farm access roads, two small culverts, Spring Creek and one wetland (Attachment A, Figure 2).

Precipitation data indicates the three months preceding the site visit were below average compared to historical conditions. Uplands throughout the restoration area are predominantly a mix of weedy species, including 11 noxious weed species. Native species within the uplands is primarily browsed common snowberry (*Symphoricarpos albus*) and cinquefoil (*Potentilla gracilis*). Native shrubs along the creek include sporadic and relatively young Wood's rose (*Rosa woodsii*), Nootka rose (*Rosa nutkana*), golden current (*Ribes aureum*), redosier dogwood (*Cornus sericea*), pacific willow (*Salix lucida ssp. lasiandra*), Douglas hawthorn (*Crataegus douglasii*), alder (*Alnus sp.*), and common snowberry.

The NRCS web soil survey indicates two soil types occur within the Project area: 1) Nitzel-Weirman complex, 2 to 5 percent slopes (77% of the Project area) which is formed primarily from alluvium; and 2) Kayak gravelly ashy loam, 0 to 2 percent slopes (23%) which is also formed from alluvium and frequently associated with floodplains.

The NWI shows Spring Creek as primarily a Riverine Upper Perennial Unconsolidated Bottom Permanently Flooded (R3UBH) wetland, with the northernmost segment of the creek as a Riverine Unknown Perennial Unconsolidated Bottom Permanently Flooded (R5UBH) wetland. NWI also maps three Palustrine Forested Broad-Leaved Deciduous Temporary Flooded and one

Palustrine Emergent Persistent Scrub-Shrub Board-Leaved Deciduous Semipermanently Flooded wetland west of Spring Creek adjacent to the Yakima River. The NHD indicates Spring Creek is predominately a perennial stream, with the northernmost segment of the creek designated as an artificial path. The Yakima River flows through the western portion of the parcel but is outside the Project area.

All but approximately 0.04 acres of the Project area is within the 100-year floodplain for the Yakima River.

## DELINEATION RESULTS

### Wetlands

Jacobs biologists delineated one wetland, Wetland 1, within the Project area (Figures 2 and 3, Attachment D – Project Area Photographs). Wetland 1 is approximately 2.77 acres and adjacent to Spring Creek. Wetland 1 is primarily a depressional palustrine emergent wetland with a minor scrub-shrub wetland component associated with Spring Creek. Refer to Attachment B for Corps Wetland Determination Data Forms and Attachment C for the Ecology Wetland Rating Forms and Figures. This is a restoration project which was designed for the sole purpose of improving riparian and instream habitat. The removal of the southern culvert will result in minor impacts to the wetland; however, these are short-term and will result in an overall improvement to the quality and habitat within the wetland. While the northern culvert occurs within the boundary of Wetland 1, there is no actual excavation of the wetland associated with the removal of the northern culvert. The culvert occurs within an upland area that is the result of placement of historic fill.

Table 1. Wetland Summary

Wetland	Size (Approx. Acreage)	Jurisdictional <sup>(1)</sup>	Cowardin Vegetation Classification <sup>(2)</sup>	HGM Class	Ecology 2014 Rating Category
1	2.77	Likely	PEM	Depressional	III

Notes:

PEM = palustrine emergent

<sup>(1)</sup>The findings presented regarding regulation under the CWA represents our best professional judgement. However, the Corps and Ecology make the official jurisdictional determinations, which may differ from the findings presented above based on their evaluation of surface water connectivity and significant nexus.

<sup>(2)</sup>U.S. Fish and Wildlife Service Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979).

### Wetland Buffer

Kittitas County Code (KCC) 17A.04.020 states that Category III wetlands that are over 10,000 square feet are required to have a buffer of 20 – 80 feet measured from the wetland boundary. The current wetland buffer is heavily disturbed from previous grazing activities with very few trees or shrubs. Dominant vegetation within the buffer is currently a mix of noxious weeds and other weedy species. All work within the wetland buffer will be purely beneficial to enhance this area.

## Watercourses

Spring Creek is at least 1.2 miles long from the confluence of the Yakima River and classified as perennial on the NHD. Spring Creek is likely spring fed and may receive subsurface flows from a high ground water table associated with the Yakima River and gravel pit mining ponds north of the parcel. During flood events or high spring flows, Spring Creek may receive out of bank flows from the Yakima River, however there is no defined channel or evidence of flow in northern portions of the parcel. The creek flows from north to south, with hydrology originating subsurface and visible surface water starting between the two culverts. The creek has a low gradient, meandering through abandoned pastures and receives additional flows from a right bank tributary that also originates subsurface. The creek flows into the Yakima River approximately 1.2 miles downstream of the Project area/parcel boundary near Yakima River mile 149. The streambed material consists of cobbles and gravels covered in a layer of silt that varies in depth depending on flow. Spring Creek is classified as a Type 2 water based on its size and meeting the physical criteria to be potentially used by fish. For Type 2 water, KCC 17A.07.010 states 40-100 feet from the OHWM is designated as Riparian Habitat Critical Area.

## MITIGATION SEQUENCING

The purpose of the Project is to enhance Spring Creek and approximately 18 acres of riparian habitat. The Project was designed per the mitigation sequencing of avoiding, minimizing, rectifying, restoring, and mitigating for impacts to Spring Creek.

## Measures to Avoid and Minimize Impacts

The existing culverts are no longer needed, and their removal is purely beneficial to improving hydraulic function and habitat within the floodplain. Weed removal will also occur within localized areas of the wetland to remove noxious weeds including common teasel (*Dipsacus fullonum*, FAC), reed canarygrass (*Phalaris arundinacea*, FACW) and yellow flag iris (*Iris pseudacorus*, OBL). When possible, a localized approach will be taken to remove individuals or small clusters of noxious weeds. Only in sections of the wetland that have formed a monoculture of reed canarygrass will the ground potentially be scraped. Care will be taken to leave native vegetation intact and only remove noxious plants. All areas will be replanted with native plants that have the highest likelihood of survival based on area specific characteristics.

In addition, the following avoidance and minimization measures will be incorporated into the Project and are designed to reduce potential effects to the creek and its buffer. Water quality will be maintained at all times within the Washington State Department of Ecology guidelines in Washington Administrative Code (WAC) 173-201A. The County and the contractor will implement several minimization measures (MM) to avoid or minimize impacts to species, habitats, and the environment. A summary of these measures is below.

- **MM 1** – Work within the stream channel will occur in isolation from stream flows.

- **MM 2** – All work below the OHWM will be conducted during the identified in-water work window.
- **MM 3** – All equipment will be inspected for leaks prior to work each day.
- **MM 4** – All equipment that works below the OHWM will contain vegetable oil or other biodegradable alternatives to hydraulic fluid.
- **MM 5** – Equipment staging and fueling will occur more than 50 feet of the OHWM of Spring Creek.
- **MM 6** – Channel isolation and fish exclusion will be conducted by qualified biologists in accordance with the 2016 Washington State Department of Transportation (WSDOT) Fish Exclusion Protocols and Standards.
- **MM 7** – If small pumps are used to dewater holding pools or hyporheic flows, they will be screened to National Marine Fisheries Service (NMFS) or WA State Dept. of Fish and Wildlife (WDFW) criteria.
- **MM 8** – Electrofishing will not be used.
- **MM 9** – BMPs will be used to prevent sedimentation or turbidity from project activities from extending more than 100 feet downstream of the project area (as per WAC 173-201A).
- **MM 10** – Access for culvert removal will be from the banks, or from the existing primitive road.
- **MM 11** – Excavated road material and sediment will be removed from the project site to an approved upland location.
- **MM 12** – Exposed or unworked soil shall be covered or stabilized.
- **MM 13** – Spill kits will be on site at all times during project activities.

### **Measures to Rectify and Restore Impacts**

Restoration of impacted areas will include removing fill and other construction-related materials from the site and replanting these areas as described in the Spring Creek Restoration Plan. Native plant communities will be selected for each temporarily impacted area to meet site conditions (i.e., sunny, shady, wet, or dry) and growth preferences (i.e., tall or short tree, shrub, or groundcover).

### **Impacts and Mitigation**

Impacts to Wetland 1 will only occur in areas that will benefit the overall quality of the wetland. This will include localized and focused efforts to remove non-native species such as common teasel, reed canarygrass, and yellow flag iris. When applicable, individual clusters will be dug up or larger monoculture patches may be scraped to remove these species and those areas will be replanted with native species.

Minor wetland and stream impacts will occur at the southern culvert location to remove a fish passage barrier and enhance hydraulic function of Spring Creek. The impacts from this Project are self-mitigating in that all impacted resources will be restored on-site to a much higher functional value. The Project will improve aquatic habitat and watershed hydrology by a higher functioning stream channel within the culvert removal areas and improve riparian habitat along Spring Creek throughout the Project. These improvements to Spring Creek hydrology, fish passage and restored riparian buffer is considered a functional uplift from existing conditions, which could potentially lead to the future creation of additional wetland habitat.

## **LIMITATIONS**

This report was prepared for the exclusive use of the County and their representatives. Jacobs prepared the findings and conclusions documented in this report for specific application to this Project. The conclusions and recommendations presented in this report are the professional opinions based on interpretation of information currently available and made within the operational scope, budget, and schedule constraints of this Project. No warranty, expressed or implied, is made.

Wetland boundaries identified by Jacobs are preliminary until the USACE validates the flagged wetland boundaries. Validation of the wetland boundary by the USACE provides a certification, usually written, that the wetland boundaries verified are the boundaries that will be regulated by the USACE until specified data or until the regulations are modified. Only the USACE can provide this certification.

Since wetlands are dynamic communities affected by both natural and human activities, changes in wetland boundaries may be expected; therefore, wetland delineations cannot remain valid for an indefinite period. The USACE typically recognizes the validity of wetland delineations for a period of 5 years after completion.

If you have any questions regarding the findings and recommendations in this report, please call John Mulligan at (518) 321-8640 or via email at [John.Mulligan@jacobs.com](mailto:John.Mulligan@jacobs.com).



## Memorandum

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Yakima, WA 98901, USA  
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### **Attachment A. Reference Maps**

Figure 1. Vicinity Map

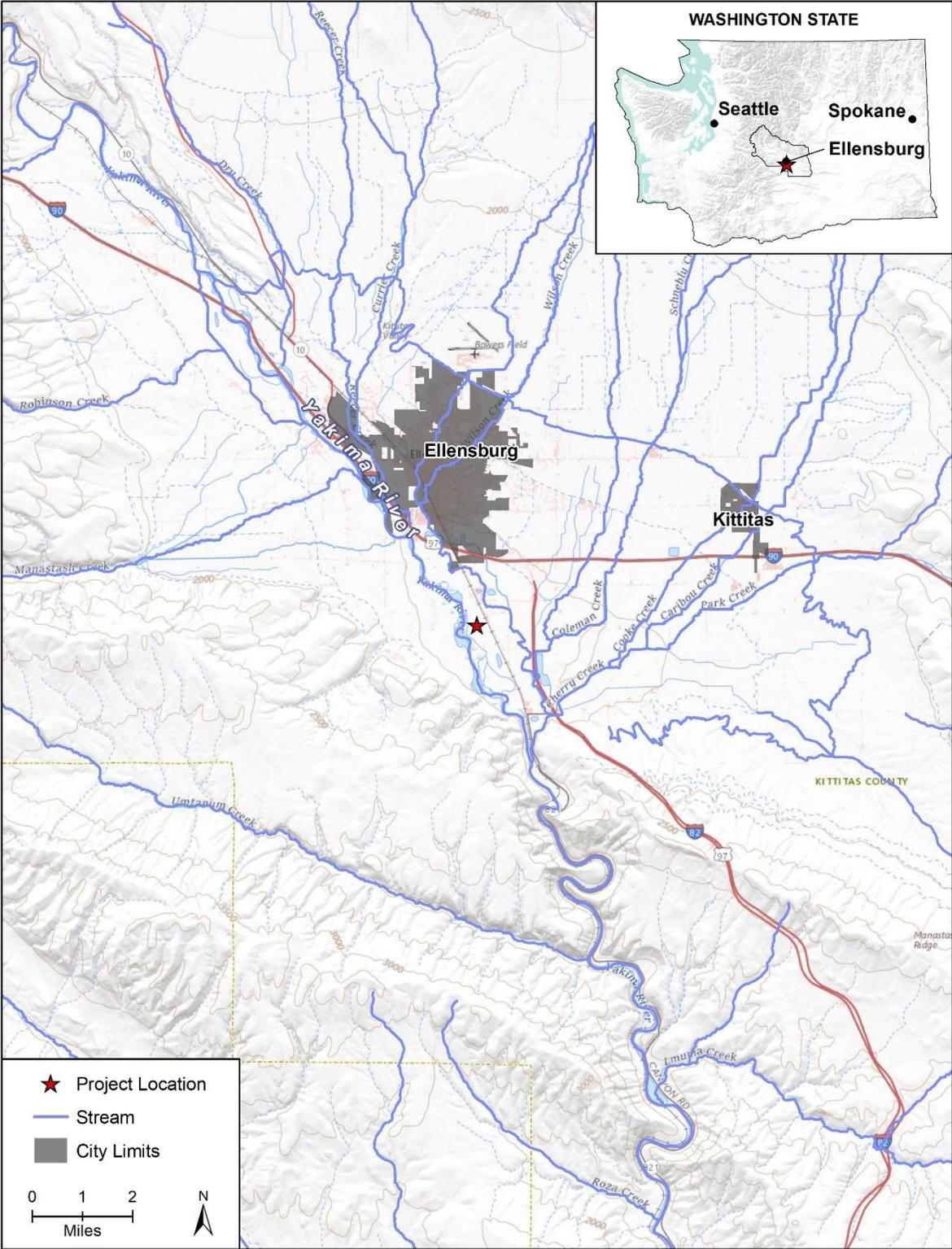


Figure 2. Delineated OHWM and Wetlands

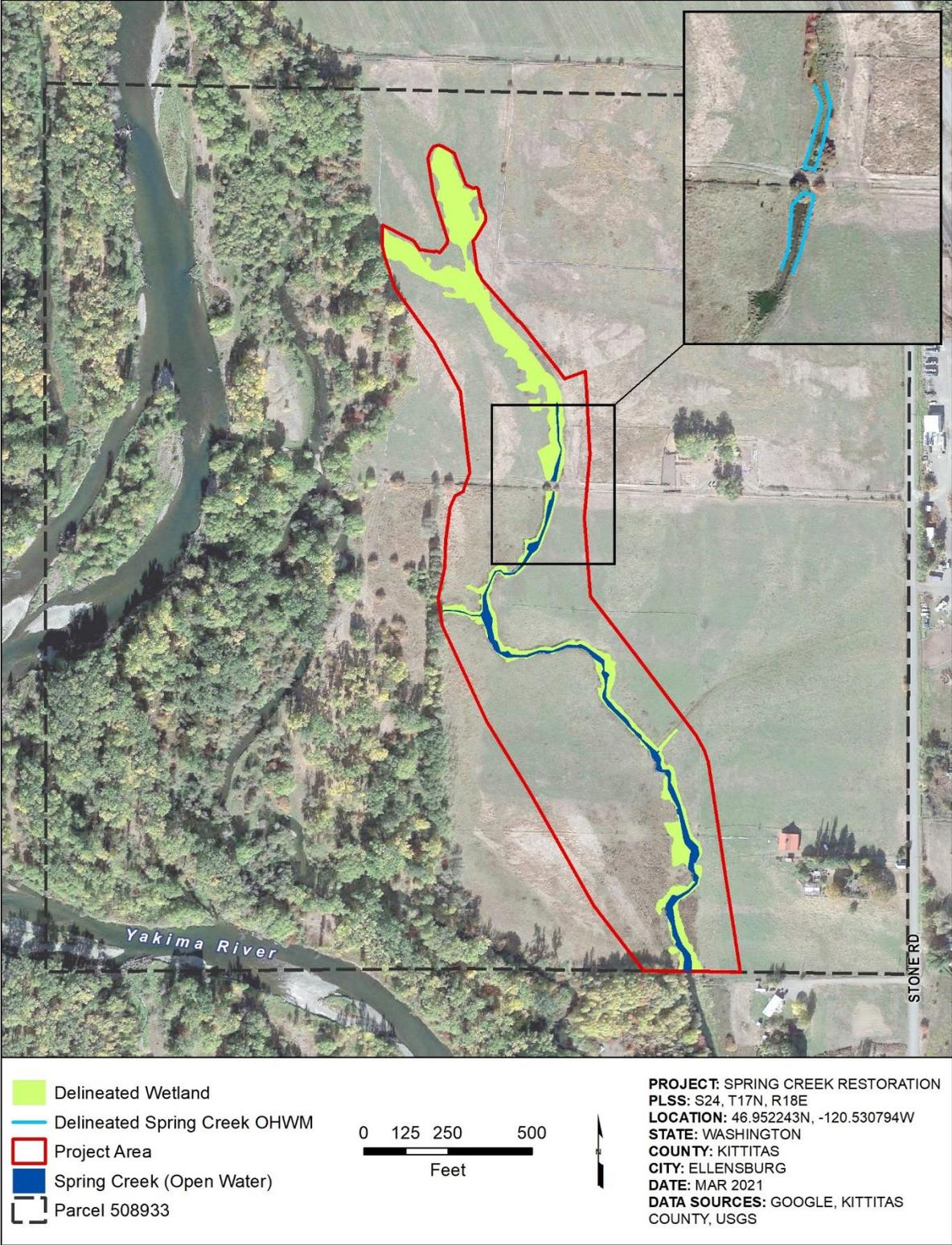
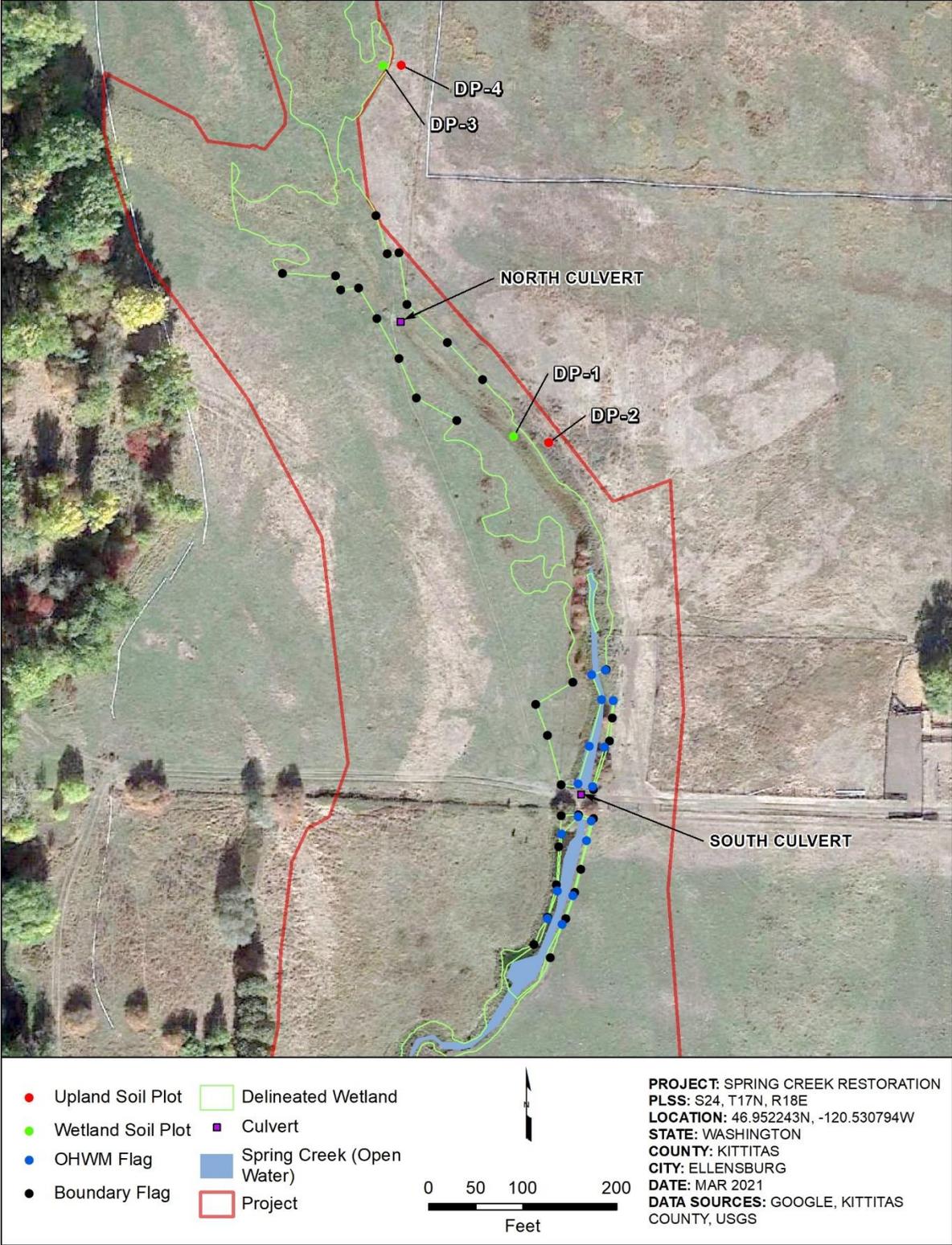


Figure 3: Wetland Data Plot and Stake Locations



## **Attachment B. Corps Wetland Data Forms**

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Spring Creek Restoration Project - Wetland 1 City/County: Kittitas County Sampling Date: 8/19/2020  
 Applicant/Owner: Kittitas County State: WA Sampling Point: DP-1  
 Investigator(s): Jen Bader and John Mulligan Section, Township, Range: S24 of T17N R18E  
 Landform (hillslope, terrace, etc.): channel Local relief (concave, convex, none): concave Slope (%): 2  
 Subregion (LRR): B Lat: 46.953085° Long: -120.532954° Datum: WGS 84  
 Soil Map Unit Name: Nitzel-Weirman Complex, 2 to 5 percent slopes NWI Classification: PEM

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

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <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
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Remarks:  
 Data plot is located within an upper portion of the Spring Creek channel where no surface flows are present.

### VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status																																									
<b>Tree Stratum</b> (Plot size: <u>20ft x 20ft</u> )																																													
1. <u>None</u>					<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>100.0%</u> (A/B)																																								
2. _____																																													
3. _____																																													
4. _____																																													
_____ = Total Cover																																													
<b>Sapling/Shrub Stratum</b> (Plot size: <u>15ft x 15ft</u> )																																													
1. <u>Crataegus douglasii</u>	5	Y	55.6	FAC	<b>Prevalence Index worksheet:</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 10%; text-align: center;">Total % Cover of:</td> <td style="width: 10%;"></td> <td style="width: 10%; text-align: center;">Multiply by:</td> <td style="width: 15%;"></td> </tr> <tr> <td>OBL species</td> <td style="text-align: center;">91</td> <td></td> <td style="text-align: center;">x 1 =</td> <td style="text-align: center;">91</td> </tr> <tr> <td>FACW species</td> <td style="text-align: center;">11</td> <td></td> <td style="text-align: center;">x 2 =</td> <td style="text-align: center;">22</td> </tr> <tr> <td>FAC species</td> <td style="text-align: center;">7</td> <td></td> <td style="text-align: center;">x 3 =</td> <td style="text-align: center;">21</td> </tr> <tr> <td>FACU species</td> <td style="text-align: center;">0</td> <td></td> <td style="text-align: center;">x 4 =</td> <td style="text-align: center;">0</td> </tr> <tr> <td>UPL species</td> <td style="text-align: center;">0</td> <td></td> <td style="text-align: center;">x 5 =</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: center;">109</td> <td style="text-align: center;">(A)</td> <td></td> <td style="text-align: center;">134 (B)</td> </tr> <tr> <td colspan="5" style="text-align: center;">Prevalence Index = B/A = <u>1.229</u></td> </tr> </table>		Total % Cover of:		Multiply by:		OBL species	91		x 1 =	91	FACW species	11		x 2 =	22	FAC species	7		x 3 =	21	FACU species	0		x 4 =	0	UPL species	0		x 5 =	0	Column Totals:	109	(A)		134 (B)	Prevalence Index = B/A = <u>1.229</u>				
	Total % Cover of:		Multiply by:																																										
OBL species	91		x 1 =	91																																									
FACW species	11		x 2 =	22																																									
FAC species	7		x 3 =	21																																									
FACU species	0		x 4 =	0																																									
UPL species	0		x 5 =	0																																									
Column Totals:	109	(A)		134 (B)																																									
Prevalence Index = B/A = <u>1.229</u>																																													
2. <u>Salix lasiandra</u>	4	Y	44.4	FACW																																									
3. _____																																													
4. _____																																													
5. _____																																													
_____ = Total Cover																																													
<b>Herb Stratum</b> (Plot size: <u>5ft x 5ft</u> )																																													
1. <u>Carex exsiccata</u>	90	Y	90.0	OBL	<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) <small><sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>																																								
2. <u>Epilobium ciliatum</u>	3	N	3.0	FACW																																									
3. <u>Dipsacus fullonum</u>	2	N	2.0	FAC																																									
4. <u>Sium suave</u>	1	N	1.0	OBL																																									
5. <u>Juncus effusus</u>	4	N	4.0	FACW																																									
6. _____																																													
7. _____																																													
8. _____																																													
_____ = Total Cover																																													
_____ = Total Cover																																													
<b>Woody Vine Stratum</b> (Plot size: <u>15ft x 15ft</u> )																																													
1. <u>None</u>					<b>Hydrophytic Vegetation Present?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No																																								
2. _____																																													
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>																																													

Remarks:  
 Crataegus douglasii is growing on stream banks and overhangs the plot.

**SOIL**

Sampling Point: DP-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>				
0-3	10YR	3/3	95	7.5YR	4/6	5	C	PL&M	sandy clay loam	
3-16	7.5YR	2/1	80	7.5YR	4/6	20	C	PL&M	silty clay loam	

<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.)**

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

**Indicators for Problematic Hydric Soils<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 Soil Present?**     Yes     No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thick Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

**Field Observations:**

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

**Wetland Hydrology Present?**     Yes     No

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

Remarks:

Data plot is within the Spring Creek channel. Channel is pronounced but completely vegetated with no evidence of recent scour. Flows observed in the channel below this data plot suggests subsurface hydrology is present.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Spring Creek Restoration Project - Wetland 1 City/County: Kittitas County Sampling Date: 8/19/2020  
 Applicant/Owner: Kittitas County State: WA Sampling Point: DP-2  
 Investigator(s): Jen Bader and John Mulligan Section, Township, Range: S24 of T17N R18E  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope (%): 2  
 Subregion (LRR): B Lat: 46.953067° Long: -120.532804° Datum: WGS 84  
 Soil Map Unit Name: Nitzel-Weirman Complex, 2 to 5 percent slopes NWI Classification: upland

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

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <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: Data plot is in upland area outside of channel to the northeast. Vegetation in this area, just outside the channel is mostly desiccated with low species diversity.	

### VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status																									
<b>Tree Stratum</b> (Plot size: <u>20ft x 20ft</u> )																													
1. <u>None</u>				#N/A	<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)																								
2. _____																													
3. _____																													
4. _____																													
_____ = Total Cover																													
<b>Sapling/Shrub Stratum</b> (Plot size: <u>15ft x 15ft</u> )																													
1. <u>None</u>				#N/A	<b>Prevalence Index worksheet:</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 25%; text-align: center;">Total % Cover of:</td> <td style="width: 25%; text-align: center;">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td style="text-align: center;"><u>0</u></td> <td style="text-align: center;">x 1 = <u>0</u></td> </tr> <tr> <td>FACW species</td> <td style="text-align: center;"><u>0</u></td> <td style="text-align: center;">x 2 = <u>0</u></td> </tr> <tr> <td>FAC species</td> <td style="text-align: center;"><u>0</u></td> <td style="text-align: center;">x 3 = <u>0</u></td> </tr> <tr> <td>FACU species</td> <td style="text-align: center;"><u>0</u></td> <td style="text-align: center;">x 4 = <u>0</u></td> </tr> <tr> <td>UPL species</td> <td style="text-align: center;"><u>91</u></td> <td style="text-align: center;">x 5 = <u>455</u></td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: center;"><u>91</u> (A)</td> <td style="text-align: center;"><u>455</u> (B)</td> </tr> <tr> <td colspan="3" style="text-align: center;">Prevalence Index = B/A = <u>5.000</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>0</u>	x 3 = <u>0</u>	FACU species	<u>0</u>	x 4 = <u>0</u>	UPL species	<u>91</u>	x 5 = <u>455</u>	Column Totals:	<u>91</u> (A)	<u>455</u> (B)	Prevalence Index = B/A = <u>5.000</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>0</u>	x 4 = <u>0</u>																											
UPL species	<u>91</u>	x 5 = <u>455</u>																											
Column Totals:	<u>91</u> (A)	<u>455</u> (B)																											
Prevalence Index = B/A = <u>5.000</u>																													
2. _____																													
3. _____																													
4. _____																													
5. _____																													
_____ = Total Cover																													
<b>Herb Stratum</b> (Plot size: <u>5ft x 5ft</u> )																													
1. <u>Artemisia absinthium</u>	90	Y	98.9	UPL	<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.																								
2. <u>Bromus tectorum</u>	1	N	1.1	UPL																									
3. _____																													
4. _____																													
5. _____																													
6. _____																													
7. _____																													
8. _____																													
_____ = Total Cover																													
<b>Woody Vine Stratum</b> (Plot size: <u>15ft x 15ft</u> )																													
1. <u>None</u>				#N/A	<b>Hydrophytic Vegetation Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No																								
2. _____																													
_____ = Total Cover																													
% Bare Ground in Herb Stratum <u>10</u>		% Cover of Biotic Crust <u>0</u>																											

Remarks:  
 Very low plant diversity in uplands surrounding data plot.

**SOIL**

Sampling Point: DP-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>		
0-16	10YR	5/4	100				sandy loam	

<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.

<p><b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b></p> <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)	<p><b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b></p> <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)
<p><b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b></p> <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)	<p><sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>

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

**HYDROLOGY**

<p><b>Wetland Hydrology Indicators:</b></p> <p>Primary Indicators (minimum of one required; check all that apply)</p> <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)		<p>Secondary Indicators (2 or more required)</p> <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)
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<p><b>Field Observations:</b></p> 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)	<p><b>Wetland Hydrology Present?</b>      <input type="radio"/> Yes      <input checked="" type="radio"/> No</p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Soils are very dry and vegetation is not lush. No wetland hydrology indicators were observed.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Spring Creek Restoration Project - Wetland 1 City/County: Kittitas County Sampling Date: 8/24/2020  
 Applicant/Owner: Kittitas County State: WA Sampling Point: DP-3  
 Investigator(s): Jen Bader and John Mulligan Section, Township, Range: S24 of T17N R18E  
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 2  
 Subregion (LRR): B Lat: 46.954167° Long: -120.533513° Datum: WGS 84  
 Soil Map Unit Name: Nitzel-Weirman Complex, 2 to 5 percent slopes NWI Classification: PEM

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

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <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: Juncus extended up bank away from channel in this area.	

### VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status	
<b>Tree Stratum</b> (Plot size: <u>20ft x 20ft</u> )					
1. <u>None</u>					#N/A
2. _____					
3. _____					
4. _____					
	= Total Cover				
<b>Sapling/Shrub Stratum</b> (Plot size: <u>15ft x 15ft</u> )					
1. <u>None</u>					#N/A
2. _____					
3. _____					
4. _____					
5. _____					
	= Total Cover				
<b>Herb Stratum</b> (Plot size: <u>5ft x 5ft</u> )					
1. <u>Juncus arcticus</u>	50	Y	61.0		FACW
2. <u>Elymus repens</u>	15	N	18.3		FAC
3. <u>Poa pratensis</u>	15	N	18.3		FAC
4. <u>Plantago lanceolata</u>	2	N	2.4		FAC
5. _____					
6. _____					
7. _____					
8. _____					
	82 = Total Cover				
<b>Woody Vine Stratum</b> (Plot size: <u>15ft x 15ft</u> )					
1. <u>None</u>					#N/A
2. _____					
	= Total Cover				
% Bare Ground in Herb Stratum <u>0</u>		% Cover of Biotic Crust <u>0</u>			

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

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**Prevalence Index worksheet:**

	Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0	
FACW species	50	x 2 =	100	
FAC species	32	x 3 =	96	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	82	(A)	196	(B)

Prevalence Index = B/A = 2.390

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**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:  
Litter covered an additional 20% of the ground.

**SOIL**

Sampling Point: DP-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>			
0-4	10YR	3/2	100				Silty Clay Loam		
4-16	10YR	3/2	93	7.5YR	4/6	7	C	PL&M	Silty Clay Loam

<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.)**

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

**Indicators for Problematic Hydric Soils<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 Soil Present?**       Yes       No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thick Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

**Field Observations:**

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

**Wetland Hydrology Present?**       Yes       No

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

Remarks:

Hydrology is likely from high groundwater table associated with Spring Creek, the Yakima River and/or large holding ponds located to the north of the site.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Spring Creek Restoration Project - Wetland 1 City/County: Kittitas County Sampling Date: 8/24/2020  
 Applicant/Owner: Kittitas County State: WA Sampling Point: DP-4  
 Investigator(s): Jen Bader and John Mulligan Section, Township, Range: S24 of T17N R18E  
 Landform (hillslope, terrace, etc.): bench Local relief (concave, convex, none): none Slope (%): 2  
 Subregion (LRR): B Lat: 46.954168° Long: -120.533434° Datum: WGS 84  
 Soil Map Unit Name: Nitzel-Weirman Complex, 2 to 5 percent slopes NWI Classification: upland

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

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <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: Plot is on bench just outside of wetland to the east.	

### VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status	
<b>Tree Stratum</b> (Plot size: <u>20ft x 20ft</u> )					
1. <u>None</u>					#N/A
2. _____					
3. _____					
4. _____					
	= Total Cover				
<b>Sapling/Shrub Stratum</b> (Plot size: <u>15ft x 15ft</u> )					
1. <u>None</u>					#N/A
2. _____					
3. _____					
4. _____					
5. _____					
	= Total Cover				
<b>Herb Stratum</b> (Plot size: <u>5ft x 5ft</u> )					
1. <u>Bromus tectorum</u>	50	Y	55.6		UPL
2. <u>Lepidium perfoliatum</u>	30	Y	33.3		FACU
3. <u>Sisymbrium altissimum</u>	10	N	11.1		FACU
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
	90 = Total Cover				
<b>Woody Vine Stratum</b> (Plot size: <u>15ft x 15ft</u> )					
1. <u>None</u>					#N/A
2. _____					
	= Total Cover				
% Bare Ground in Herb Stratum <u>25</u> % Cover of Biotic Crust <u>0</u>					

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

---

**Prevalence Index worksheet:**

	Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	40	x 4 =	160	
UPL species	50	x 5 =	250	
Column Totals:	90	(A)	410	(B)

Prevalence Index = B/A = 4.556

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**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: DP-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>		
0-16	10YR	3/2	100				Silty Clay Loam	

<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 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>:**

<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.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

**Hydric Soil Present?**       Yes       No

Remarks:  
 Soil very dry. No hydric soil indicators were observed.

**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"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> FAC-Neutral Test (D5)
<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)	

**Field Observations:**

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

**Wetland Hydrology Present?**       Yes       No

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

Remarks:  
 No wetland hydrology indicators were observed.

## **Attachment C. Ecology Rating Forms and Figures**

# RATING SUMMARY – Eastern Washington

Name of wetland (or ID #): Wetland 1 - Spring Creek Date of site visit: 0824/2020

Rated by Jen Bader Trained by Ecology?  Yes  No Date of training 9/13/2018

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 Google Earth/ESRI

**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

**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

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>List appropriate rating (H, M, L)</i>				
Site Potential	L	M	M	
Landscape Potential	L	L	H	
Value	M	L	H	<b>Total</b>
<b>Score Based on Ratings</b>	4	4	8	<b>16</b>

## 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	

## 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	N/A
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:**

The dominant HGM class for this wetland is depressional. The upper portion of the wetland comprises over 50% of the wetland area as a depressional wetland. Lower portions of the wetland may receive overbank flooding in extreme circumstances, but this is not primary hydrologic receiver for this wetland. Wetland hydrology likely comes from a high ground water table associated with subsurface hydrology from and feeding Spring Creek. As such, the overall wetland was rated as depressional.

<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 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>		0
Yes = 3    No = 0		
D 1.3. <u>Characteristics of persistent vegetation</u> (Emergent, Scrub-shrub, and/or Forested Cowardin classes)		
Wetland has persistent, ungrazed, vegetation for > 2/3 of area	points = 5	0
Wetland has persistent, ungrazed, vegetation from 1/3 to 2/3 of area	points = 3	
Wetland has persistent, ungrazed vegetation from 1/10 to < 1/3 of area	points = 1	
Wetland has persistent, ungrazed vegetation < 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 > 1/2 total area of wetland	points = 3	1
Area seasonally ponded is 1/4 - 1/2 total area of wetland	points = 1	
Area seasonally ponded is < 1/4 total area of wetland	points = 0	
Total for D 1		4
Add the points in the boxes above		

**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	0
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?		
Source	Yes = 1    No = 0	0
Total for D 2		0
Add the points in the boxes above		

**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	0
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	0
Total for D 3		1
Add the points in the boxes above		

**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 checked="" type="checkbox"/> Wetland has an intermittently flowing outlet	points = 4	
<input type="checkbox"/> Wetland has a highly constricted permanently flowing outlet	points = 4	
Wetland has a permanently flowing unconstricted surface outlet	points = 0	
<i>(If outlet is a ditch and not permanently flowing treat wetland as "intermittently flowing")</i>		
D 4.2. <u>Depth of storage during wet periods:</u> <i>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).</i>		
Seasonal ponding: > 3 ft above the lowest point in wetland or the surface of permanent ponding	points = 8	2
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 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>6</b>

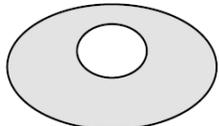
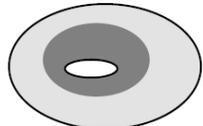
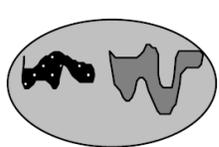
**Rating of Site Potential** If score is:  12 - 16 = H  6 - 11 = M  0 - 5 = L *Record the rating on the first page*

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	0
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	0
Total for D 5		Add the points in the boxes above <b>0</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		0
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>0</b>

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

<b>These questions apply to wetlands of all HGM classes.</b>		(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: Check the Cowardin vegetation classes present and categories of emergent plants. Size threshold for each category is $\geq \frac{1}{4}$ ac or $\geq 10\%$ of the wetland if wetland is $< 2.5$ ac.		1
<input type="checkbox"/> Aquatic bed <input checked="" type="checkbox"/> Emergent plants 0 - 12 in (0-30 cm) high are the highest layer and have $> 30\%$ cover <span style="float: right;">4 or more checks: points = 3</span> <input type="checkbox"/> Emergent plants $> 12 - 40$ in ( $> 30-100$ cm) high are the highest layer with $>30\%$ cover <span style="float: right;">3 checks: points = 2</span> <input type="checkbox"/> Emergent plants $> 40$ in ( $> 100$ cm) high are the highest layer with $>30\%$ cover <span style="float: right;">2 checks: points = 1</span> <input checked="" type="checkbox"/> Scrub-shrub (areas where shrubs have $> 30\%$ cover) <span style="float: right;">1 check: points = 0</span> <input type="checkbox"/> Forested (areas where trees have $> 30\%$ cover)		
H 1.2. Is one of the vegetation types Aquatic Bed?		Yes = 1    No = 0
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? Answer YES for Lake Fringe wetlands. <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? Answer yes only if H 1.3.1 is No. <div style="text-align: right;"><input checked="" type="checkbox"/> Yes = 3    No = 0</div>		3
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> . 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-flaa iris, and saltcedar (Tamarisk) # of species        5 _____ <span style="float: right;">Scoring: <math>&gt; 9</math> species: points = 2</span> <span style="float: right;">4 - 9 species: points = 1</span> <span style="float: right;"><math>&lt; 4</math> species: points = 0</span>		1
H 1.4. <u>Interspersion of habitats</u> Decide from the diagrams below whether interspersion among types of plant structures (described in H 1.1), and unvegetated areas (open water or mudflats) is high, moderate, low, or none. 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.		3
<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p><b>None = 0 points</b></p> </div> <div style="text-align: center;">  <p><b>Low = 1 point</b></p> </div> <div style="text-align: center;">  <p><b>Moderate = 2 points</b></p> </div> <div style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 20px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  <p>Riparian braided channels with 2 classes</p> </div> </div> <p>All three diagrams in this row are <b>HIGH = 3 points</b></p>		

<b>H 1.6. Special habitat features:</b> Check the habitat features that are present in the wetland. The number of checks is the number of		
<input 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 checked="" 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		2
<input checked="" type="checkbox"/> Emergent or shrub vegetation in areas that are permanently inundated/ponded.		
<input 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> )		
<b>Total for H 1</b>		Add the points in the boxes above <b>10</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> Calculate:		
21 % undisturbed habitat + ( 79 % moderate & low intensity land uses / 2 ) = 60.5%		
> 1/3 (33.3%) of 1 km Polygon	points = 3	3
20 - 33% of 1 km Polygon	points = 2	
10 - 19% of 1 km Polygon	points = 1	
< 10 % of 1 km Polygon	points = 0	
<b>H 2.2. Undisturbed habitat in 1 km Polygon around wetland.</b> Calculate:		
30.51 % undisturbed habitat + ( 59.57 % moderate & low intensity land uses / 2 ) = 60.295%		
Undisturbed habitat > 50% of Polygon	points = 3	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	
<b>H 2.3 Land use intensity in 1 km Polygon:</b>		
> 50% of 1 km Polygon is high intensity land use	points = (-2)	0
Does not meet criterion above	points = 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. Generally, this means outside boundaries of reclamation areas, irrigation districts, or reservoirs</b>		
Yes = 3	No = 0	0
<b>Total for H 2</b>		Add the points in the boxes above <b>6</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? Choose only the highest score that applies to the wetland being rated.</b>		
Site meets ANY of the following criteria:	points = 2	
<input type="checkbox"/> It has 3 or more priority habitats within 100 m (see Appendix B)		
<input checked="" type="checkbox"/> It provides habitat for Threatened or Endangered species (any plant or animal on state or federal lists)		2
<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		
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>	
<p><b>SC 1.0. Vernal Pools</b></p> <p>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?</p> <p><input type="checkbox"/> Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input.</p> <p><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></p> <p><input type="checkbox"/> The soil in the wetland is shallow [<math>&lt; 1</math> ft (30 cm) deep] and is underlain by an impermeable layer such as basalt or clay.</p> <p><input type="checkbox"/> Surface water is present for less than 120 days during the wet season.</p> <p style="text-align: right;"><input type="checkbox"/> Yes - Go to <b>SC 1.1</b>      <input checked="" type="checkbox"/> No = <b>Not vernal pool</b></p> <p>SC 1.1. Is the vernal pool relatively undisturbed in February and March?</p> <p style="text-align: right;"><input type="checkbox"/> Yes - Go to <b>SC 1.2</b>      <input type="checkbox"/> No = <b>Not a vernal pool with special characteristics</b></p>	
<p>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.)?</p> <p style="text-align: right;"><input type="checkbox"/> Yes = <b>Category II</b>      <input type="checkbox"/> No = <b>Category III</b></p>	
<p><b>SC 2.0. Alkali wetlands</b></p> <p>Does the wetland meet <b>one</b> of the following criteria?</p> <p><input type="checkbox"/> The wetland has a conductivity <math>&gt; 3.0</math> mS/cm.</p> <p><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).</p> <p><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.</p> <p><b>OR</b> does the wetland unit meet two of the following three sub-criteria?</p> <p><input type="checkbox"/> Salt encrustations around more than 75% of the edge of the wetland</p> <p><input type="checkbox"/> More than <math>\frac{3}{4}</math> of the plant cover consists of species listed on Table 4</p> <p><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.</p> <p style="text-align: right;"><input type="checkbox"/> Yes = <b>Category I</b>      <input checked="" type="checkbox"/> No = <b>Not an alkali wetland</b></p>	
<p><b>SC 3.0. Wetlands of High Conservation Value (WHCV)</b></p> <p>SC 3.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value?</p> <p style="text-align: right;"><input type="checkbox"/> Yes - Go to <b>SC 3.2</b>      <input type="checkbox"/> No - Go to <b>SC 3.3</b></p> <p>SC 3.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value?</p> <p style="text-align: right;"><input type="checkbox"/> Yes = <b>Category I</b>      <input checked="" type="checkbox"/> No = <b>Not WHCV</b></p> <p>SC 3.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland?</p> <p style="text-align: center;"><a href="http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwwetlands.pdf">http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwwetlands.pdf</a></p> <p style="text-align: right;"><input type="checkbox"/> Yes - <b>Contact WNHP/WDNR and to SC 3.4</b>      <input type="checkbox"/> No = <b>Not WHCV</b></p> <p>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?</p> <p style="text-align: right;"><input type="checkbox"/> Yes = <b>Category I</b>      <input type="checkbox"/> No = <b>Not WHCV</b></p>	

<p><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. If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>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>  <input type="checkbox"/> Yes - Go to <b>SC 4.3</b>                      <input type="checkbox"/> No - Go to <b>SC 4.2</b></p> <p>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?  <input type="checkbox"/> Yes - Go to <b>SC 4.3</b>                      <input checked="" type="checkbox"/> No = <b>Is not a bog for rating</b></p> <p>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?  <input type="checkbox"/> Yes = <b>Category I bog</b>                      <input type="checkbox"/> No - Go to <b>SC 4.4</b></p> <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> <p>SC 4.4. Is an area with peats or mucks forested (&gt; 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?  <input type="checkbox"/> Yes = <b>Category I bog</b>                      <input type="checkbox"/> No - Go to <b>SC 4.5</b></p> <p>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?  <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></p> <p>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  <input type="checkbox"/> Yes = <b>Is a Category I calcareous fen</b>                      <input checked="" type="checkbox"/> No = <b>Is not a calcareous fen</b></p>	
<p><b>SC 5.0. Forested Wetlands</b>  <i>Does the wetland have an area of forest rooted within its boundary that meets at least one of the following three criteria? (Continue only if you have identified that a forested class is present in question</i></p> <p><input 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)  <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></p>	
<p>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 (see Table 7)?  <input type="checkbox"/> Yes = <b>Category I</b>                      <input checked="" type="checkbox"/> No - Go to <b>SC 5.2</b></p> <p>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?  <input type="checkbox"/> Yes = <b>Category I</b>                      <input checked="" type="checkbox"/> No - Go to <b>SC 5.3</b></p> <p>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 (see Table 7)?  <input type="checkbox"/> Yes = <b>Category II</b>                      <input checked="" type="checkbox"/> No - Go to <b>SC 5.4</b></p> <p>SC 5.4. Is the forested component of the wetland within the 100 year floodplain of a river or stream?  <input type="checkbox"/> Yes = <b>Category II</b>    <input checked="" type="checkbox"/> No = <b>Not a forested wetland with special characteristics</b></p>	
<p><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</p>	

## 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.

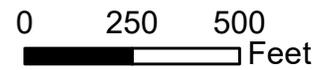


**Figure 1. Wetland 1 - Cowardin Classes**

- Emergent
- Shrub-Scrub
- Spring Creek

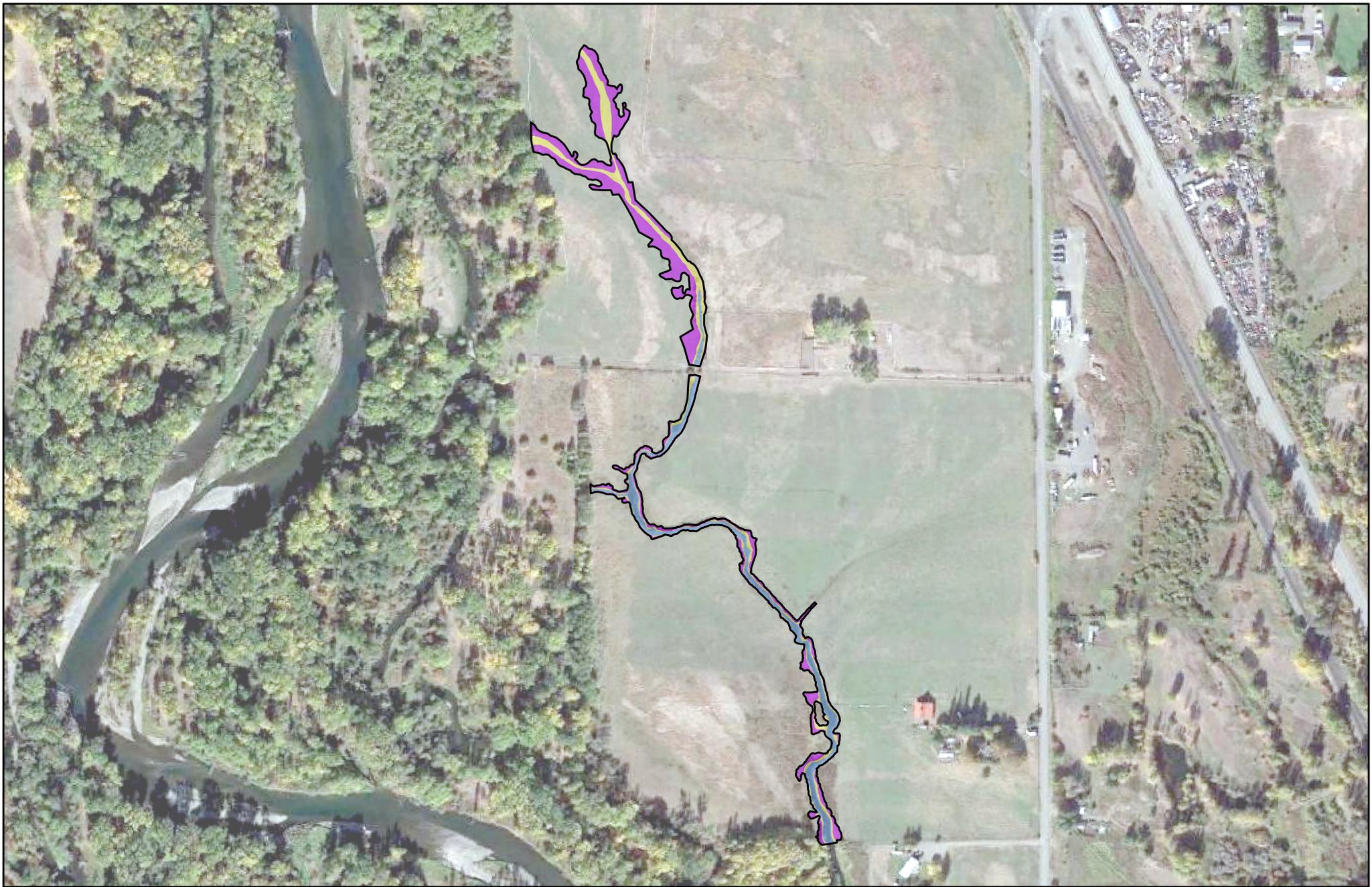
- Delineated Wetland Boundary
- Wetland Buffer (150 ft)

★ Project Location



**Jacobs**



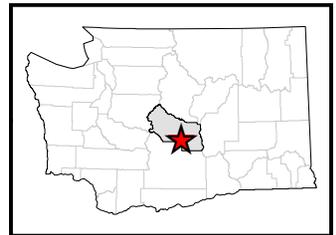
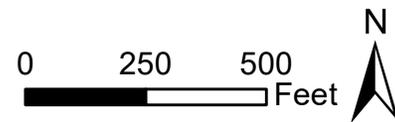


**Figure 2. Wetland 1 - Hydroperiods**

-  Surface Water
-  Saturated/Occasionally Flooded
-  Seasonally Flooded

-  Delineated Wetland Boundary
-  Project Location

**Jacobs**

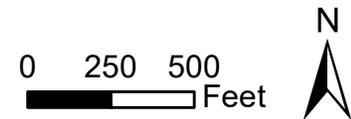


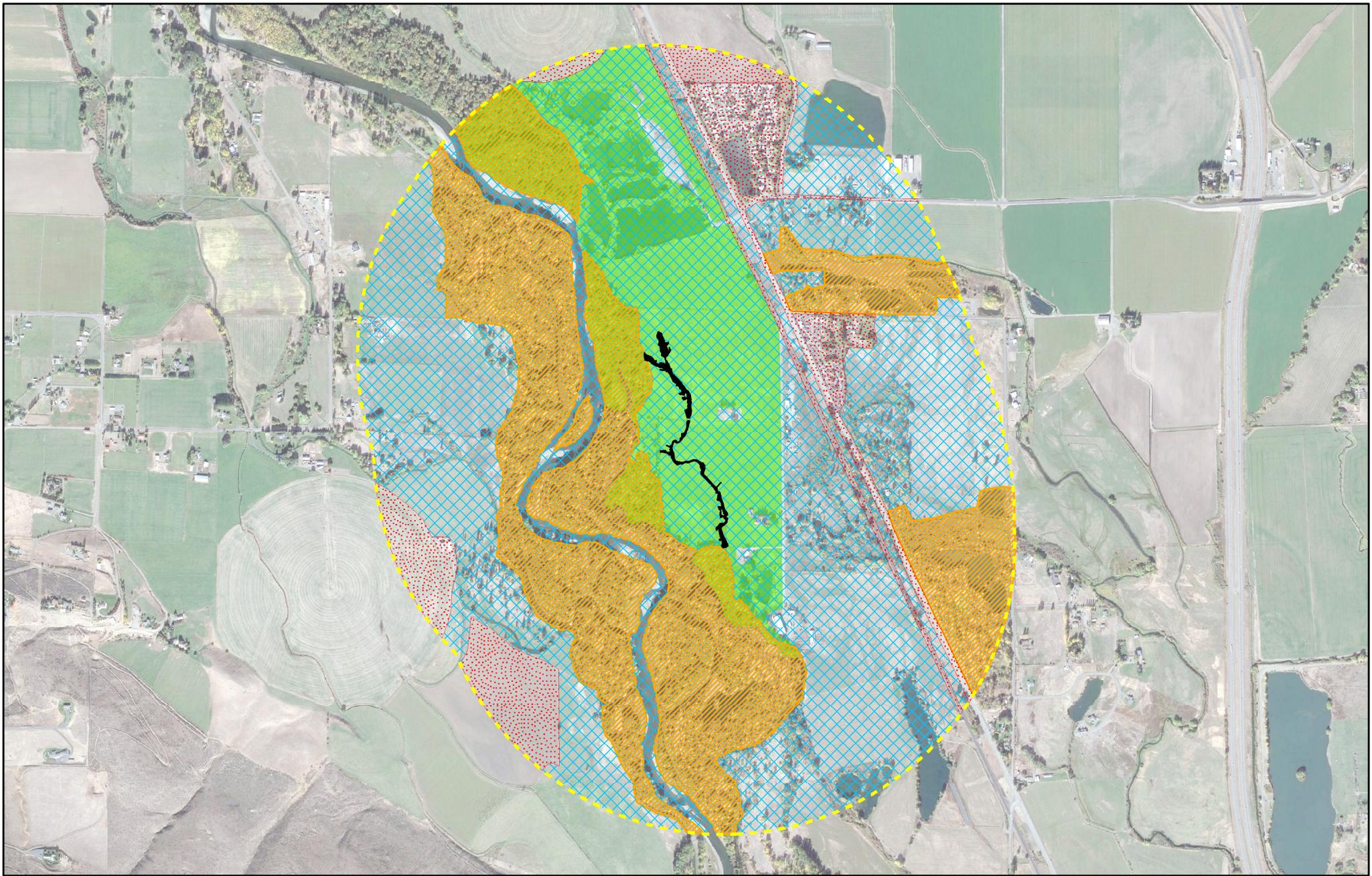


**Figure 3. Wetland 1 - Contributing Basin**

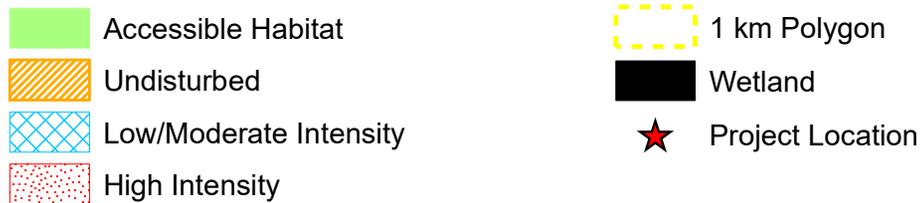
- Contributing Basin
- Delineated Wetland Boundary
- Wetland
- Spring Creek
- Project Location

**Jacobs**

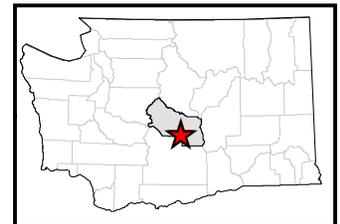
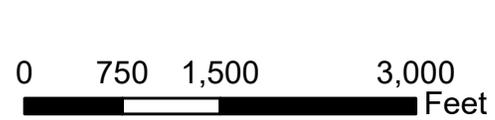


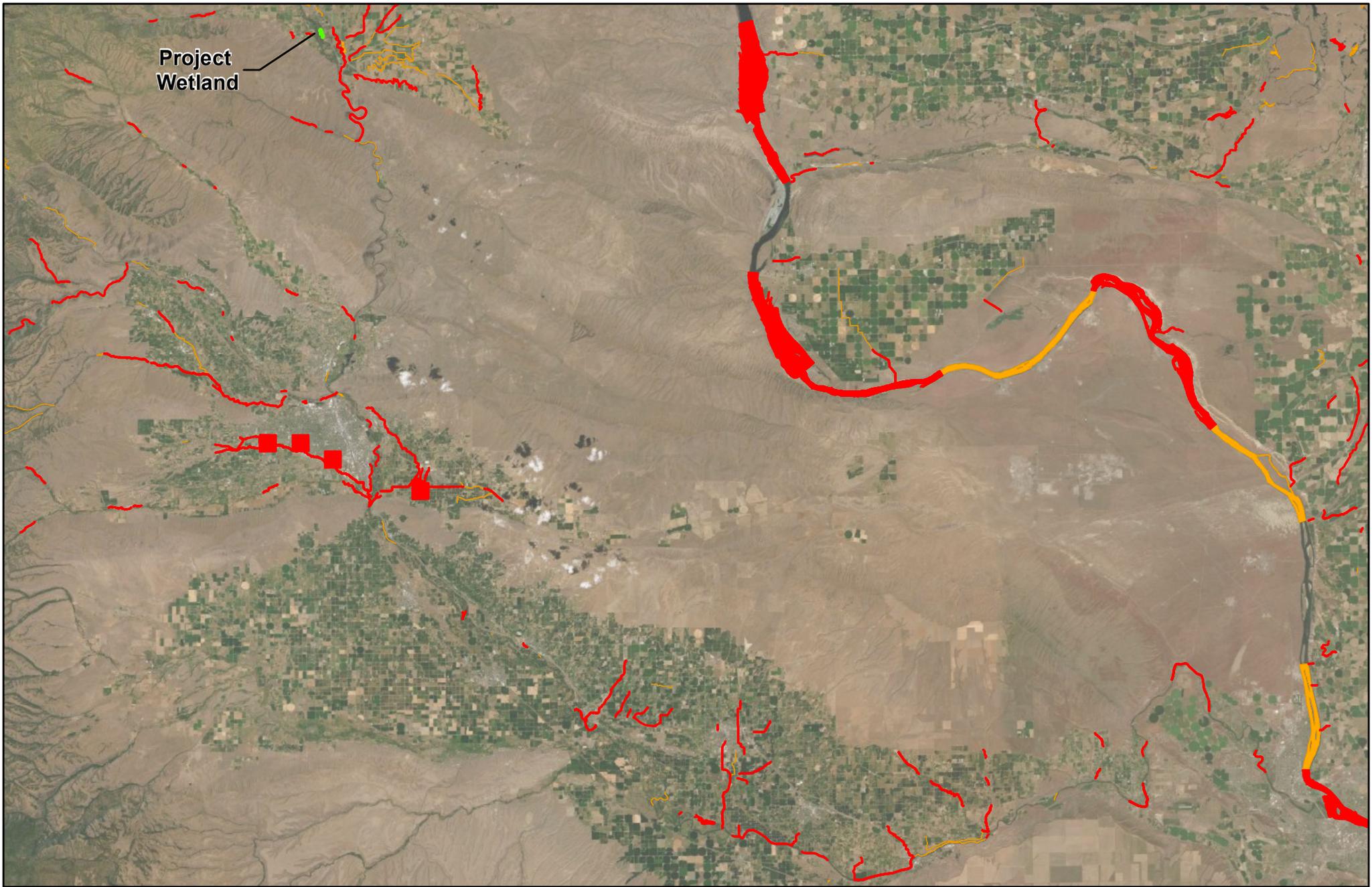


**Figure 4. Habitat within 1 km of Wetland 1**



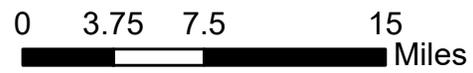
**Jacobs**





**Figure 5. 303(d) Listed Waters Downstream of Project Wetland**

- 303(d) Category 5 Impaired Waters
- 303(d) Category 4 Impaired Waters
- Project Wetland
- Project Location



Ecology homepage > Water & Shorelines > Water improvement > Total Maximum Daily Load process > Directory of projects > Kittitas County

## Water quality improvement projects

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

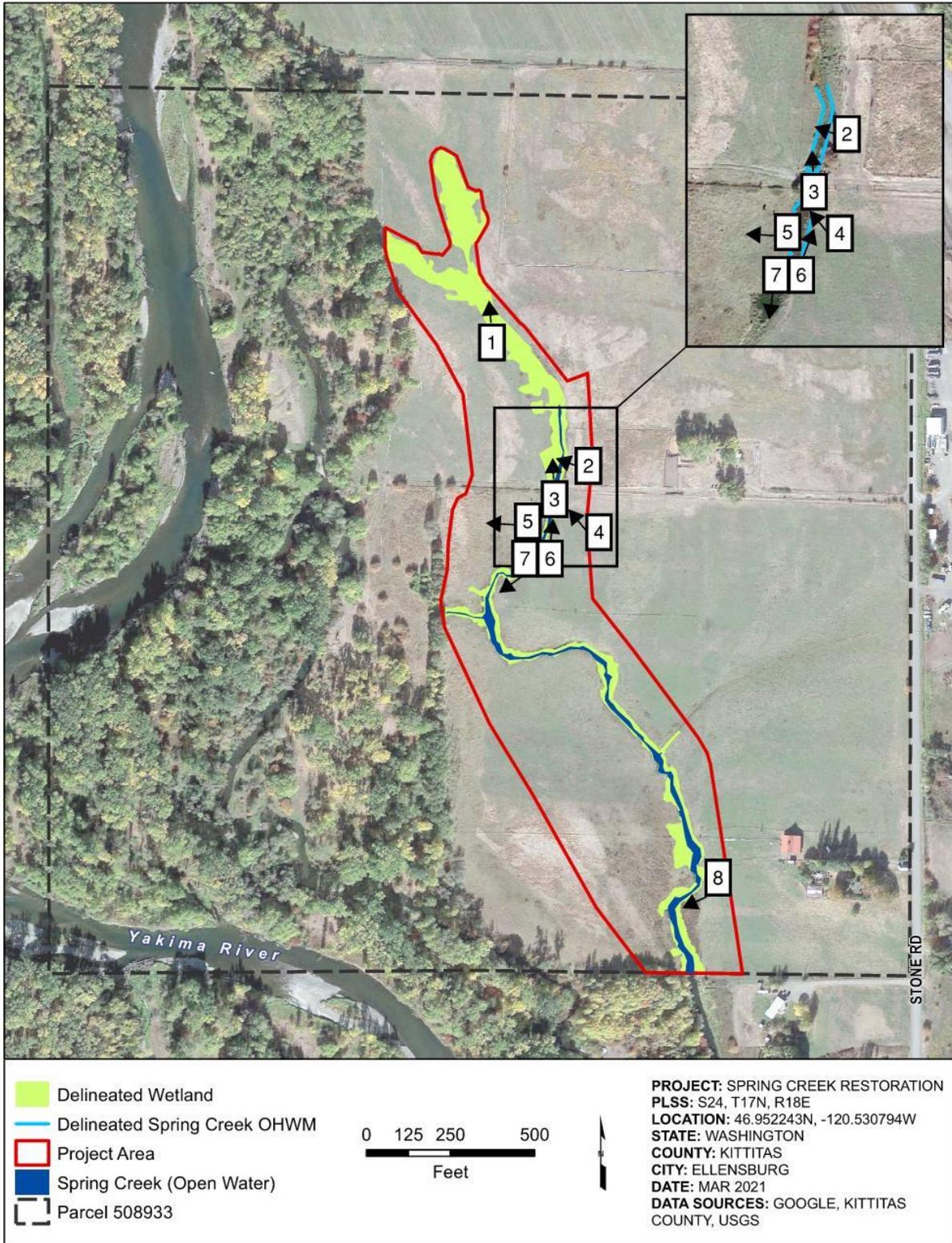
Waterbody Name(s)	Pollutant(s)	Status	Project Lead(s)
<a href="#">Yakima River</a>	Toxics	Under development	<a href="#">Jane Creech</a> 509-454-7860
<a href="#">Upper Yakima River</a>	Dieldrin DDT Suspended sediments Turbidity	EPA approved and Has implementation plan	<a href="#">Jane Creech</a> 509-454-7860
<a href="#">Upper Yakima River</a>	Temperature	Under development	<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](#).

**Figure 6 - TMDLS for WRIA in which unit is found.**

## **Attachment D. Project Area Photographs**

# Photo Guide Map





**Photo 1.** Northern culvert, looking north at Wetland 1 and Spring Creek channel upstream of surface water.



**Photo 2.** Upstream of southern culvert, looking northwest at Wetland 1 and Spring Creek channel.



**Photo 3.** Wetland 1 and Spring Creek upstream of southern culvert looking upstream.



**Photo 4.** Buried outflow of southern culvert, looking northwest.



**Photo 5.** Spring Creek, layer of algae on creek bottom.



**Photo 6.** Wetland 1 and Spring Creek, downstream (south) of southern culvert, looking upstream.



**Photo 7.** Spring Creek, downstream of southern culvert looking south (downstream).



**Photo 8.** Spring Creek, southern portion of parcel looking southwest (downstream) towards large teasel patch.