



To: Mark Cook, Kittitas County Public Works
From: Jen Bader, Jacobs
Date: August 18, 2023
Subject: **Kittitas County Search and Rescue Facility - Aquatic Resources Summary**

PURPOSE

Kittitas County is constructing a regional facility housing search and rescue (S&R) along with an emergency operations center. The property where this is planned is approximately 5 acres and is located at the Cle Elum Municipal Airport in Kittitas County, Washington State in Section 30, Township 20 North, Range 16 East, Willamette Meridian, at 46.952243° N latitude, 120.530794° W longitude (Attachment A, Figure 1). Site access will occur off of Airport Road and the access road to the Cle Elum Municipal Airport.

The purpose of this memorandum is to provide a summary of aquatic resource inventory efforts within the study area (Attachment A, Figure 2). The study area consisted of parcel 2 of the Cle Elum Municipal Airport Short Plat (parcel number 962113).

METHODS

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

- National Oceanic and Atmospheric Administration Regional Climate Centers AgACIS precipitation data
- Natural Resources Conservation Service (NRCS) Web Soil Survey
- U.S. Fish and Wildlife Service National Wetland Inventory (NWI) Wetlands Mapper
- U.S. Geological Survey National Hydrography Dataset (NHD)
- The Northwest Indian Fisheries Commission Statewide Integrated Fish Distribution Web Map
- Central Washington University 1954 aerial imagery

Jacobs biologists assessed the conditions of the study area and delineated the boundaries of wetlands and the ordinary high water mark (OHWM) of a stream on August 20 and 27, 2023. Wetlands were delineated using methods described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)*. This methodology uses the triple-parameter approach by evaluating vegetation types, soils indicators, and hydrology indicators.

All wetlands within the study area were rated 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. Wetland ratings were approximated using this data. If it is determined the Project will have wetland impacts, this data can be used in the future to rate the wetlands.

An unnamed ephemeral drainage on the east side of the Cle Elum Airport access road was delineated within the parcel using methods described in the Corps of Engineers *A Guide to Ordinary High Water Mark (OHWM) delineation for non-perennial streams in the Western Mountains, Valleys, and Coast Region of the United States* and the Department of Ecology's *Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State*. Drainages within the study area were examined for hydrology indicators including bed, bank, OHWM, flow regime in a typical year, and the presence of macroinvertebrates using the Environmental Protection Agency's *Streamflow Duration Assessment Method for the Pacific Northwest*.

EXISTING CONDITIONS

The study area consists primarily of upland forest with one wetland and an unnamed ephemeral drainage (Attachment A, Figure 2). The site is bisected by the access road for the Cle Elum Municipal Airport with the unnamed drainage occurring east of the road and the wetland occurring west of the road.

Precipitation data indicates the three months preceding the site visit were below average compared to historical "normal" conditions.

The NRCS web soil survey indicates one soil types occurs within the study area, Teanaway ashy loam, which is formed from loess with volcanic ash components, overlying glacial till.

NHD indicates there is an unnamed stream, which DNR identified as a type 'F' (fish-bearing) on the east side of Cle Elum Airport access road. NWI maps the drainage as Riverine Intermittent Streambed Seasonally Flooded (R4SBC). There are no mapped floodplains within the parcel.

DELINEATION RESULTS

Wetlands

Jacobs biologists delineated one wetland, Wetland 1, within the study area (Figure 2, Attachment B, Photographs 1 and 2). Wetland 1 is approximately 0.42 acres and adjacent to Airport Road. Wetland 1 is primarily a depressionnal palustrine scrub shrub and palustrine forested wetland that appears to have formed after the road was constructed which limited drainage from the site. Refer to Attachment C for Corps Wetland Determination Data Forms and Attachment D for the Study Area Plant List.

Table 1. Wetland Summary

Wetland	Size (Approx. Acreage)	Jurisdictional ⁽¹⁾	Cowardin Vegetation Classification ⁽²⁾	HGM Class	Likely Ecology 2014 Rating Category
1	0.42	Likely	PSS/PFO	Depressional	III

Notes:

HGM = Hydrogeomorphic

PSS = palustrine scrub shrub; PFO = palustrine forested

⁽¹⁾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.

⁽²⁾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) Table 17A.07.030: Standard Buffer Widths states that Category III wetlands are required to have a standard buffer width of 75 feet for land use with low impact, 110 feet for land use with moderate impact, and 150 feet for land use with high impact. The current land use adjacent to and within the wetland buffer is public roadway to the south, residential to the south and east and forested on the west and north. Dominant vegetation within the buffer is ponderosa pine (*Pinus ponderosa*) and mountain balm (*Ceanothus velutinus*,) (Attachment B, Photographs 3 and 4; Attachment D).

Watercourses

While DNR indicates the unnamed drainage is fish bearing and NHD maps it as intermittent within the study area, the site assessment indicated this drainage is ephemeral (Attachment E) with no water or fish presence at the time of the survey. When water is present, this drainage flows from north to south. The drainage has a low gradient, meandering through the eastern side of the parcel with upland vegetation growing within the channel (Attachment B, Photographs 5 through 8). The streambed material consists of cobbles and fine sediment. This unnamed drainage was classified during the site visit as a "Type Ns Water" per Kittitas County Code 17A.02.750. Type Ns Waters are seasonal, non-fish habitat streams in which surface flow is not present for at least some portion of a year of normal rainfall and are not located downstream from any stream reach that is a Type Np, F or S Water. Water type determination was based on the stream size, presence/absence of water flow, and the physical criteria needed to be potentially used by fish. Type Ns streams have a 50-foot Riparian Management Zone and Buffer width within the Cascade Ecoregion (KCC Table 17A.04.030.4).

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 contact Jen Bader at (509) 899-5256 or at Jennifer.Bader@jacobs.com.

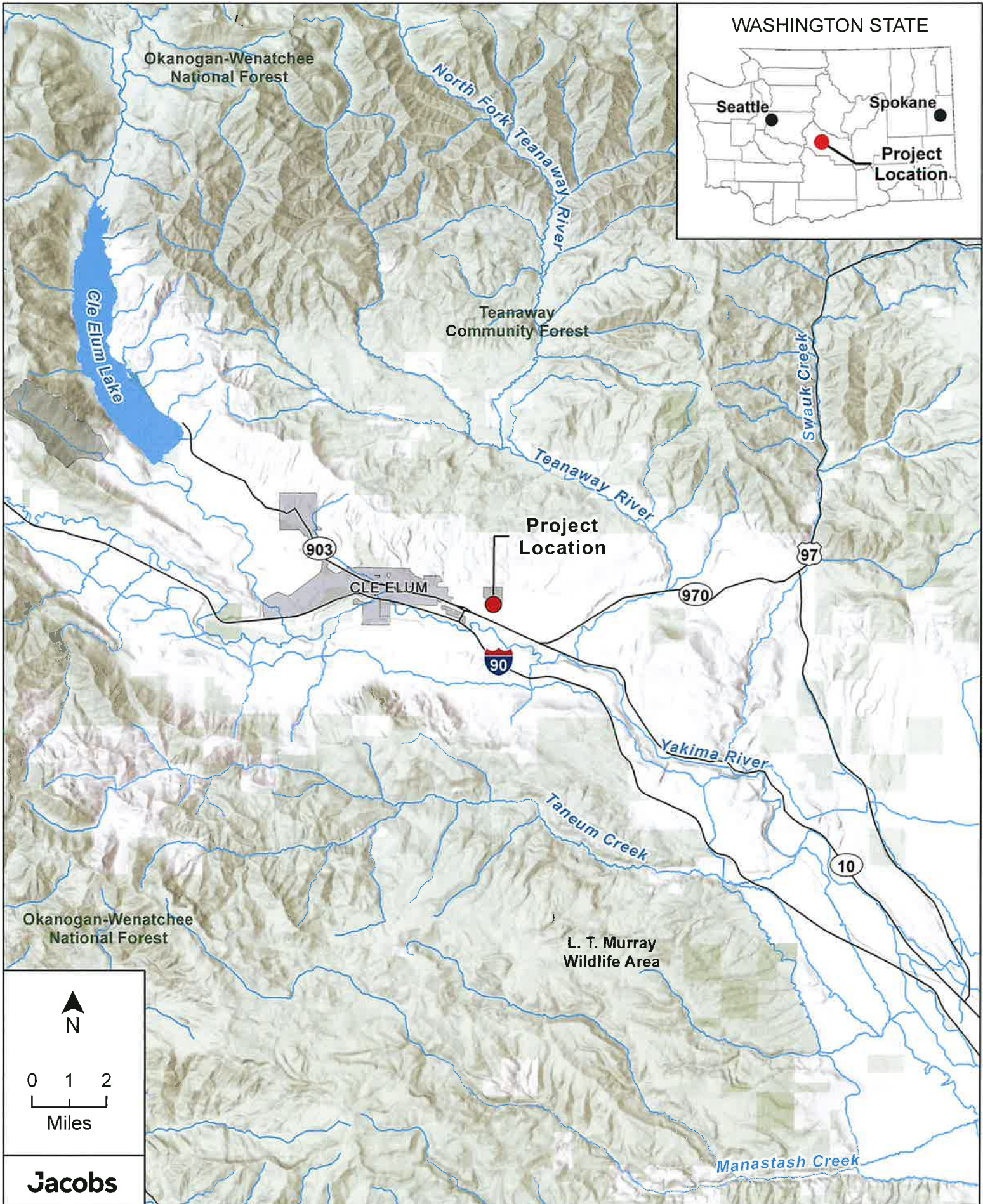


Memorandum

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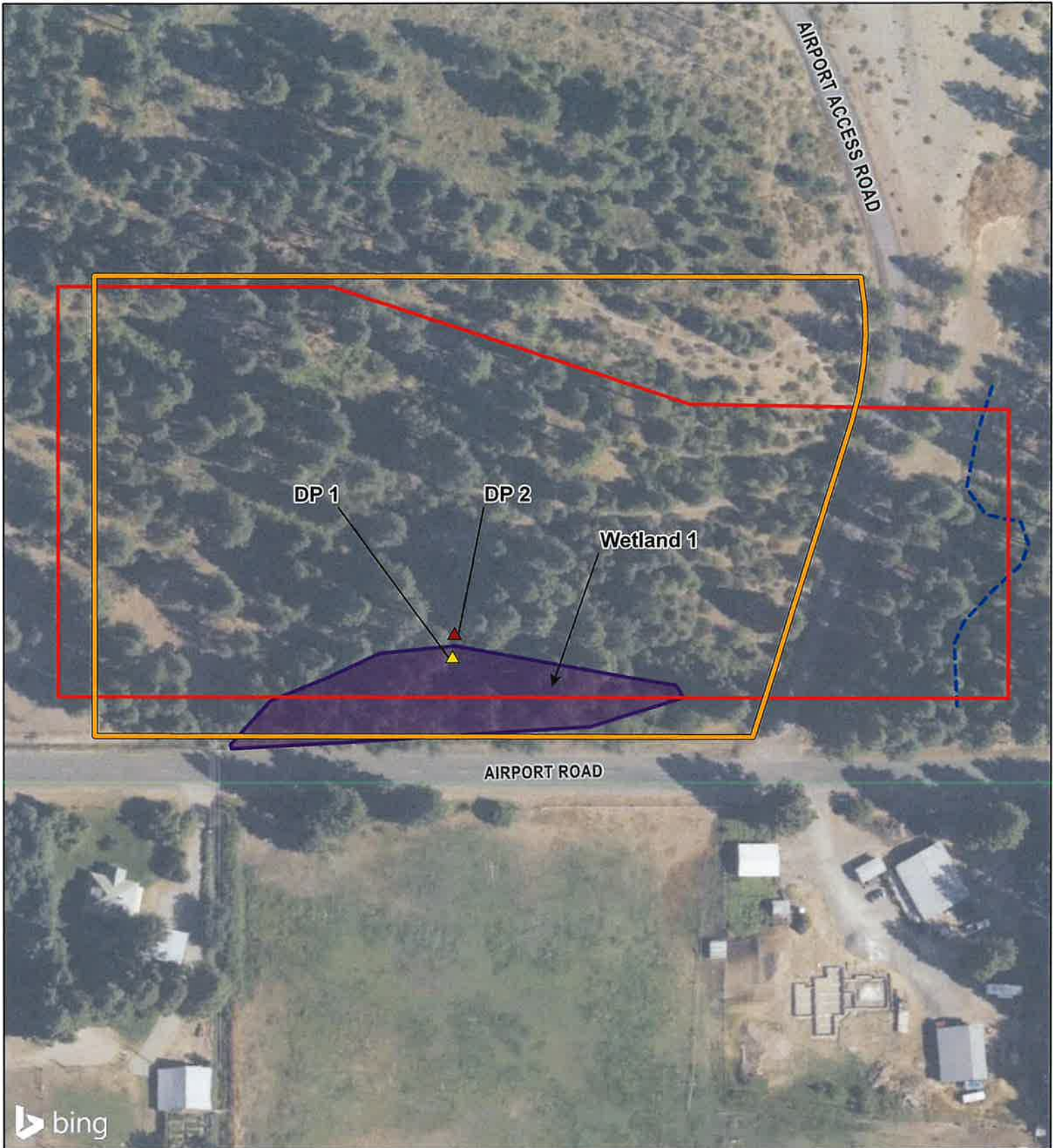
Attachment A. Reference Maps

FIGURE 1. VICINITY



Data Sources: Kittitas County, USFWS, USGS, WSDOT. Basemap Sources: Esri, NASA, NGA, USGS.

FIGURE 2. STUDY AREA



Study Area

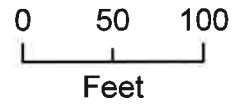
Delineated Wetland Boundary

Boundary Line Adjustment

Upland Data Plot

Wetland Data Plot

Delineated Ephemeral Drainage



Jacobs

Basemap Source: Bing © 2023 Microsoft Corporation.

Attachment B. Project Area Photographs



Photograph 1: Wetland 1 looking from north to south toward Airport Rd.



Photograph 2: Wetland 1 looking at data plot location.

Kittitas County Search and Rescue Facility
Attachment B: Photographs



Photograph 3: Upland area within the study area looking northwest.



Photograph 4: Upland area within the study area.



Photograph 5: Drainage on east side of parcel looking downstream, or the upstream of culvert.



Photograph 6: Drainage on east side of parcel looking upstream, or the downstream of culvert.



Photograph 7: Drainage on east side of parcel looking downstream.



Photograph 8: Drainage on east side of parcel looking upstream.

Attachment C. Corps Wetland Data Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Search and Rescue Site - Wetland 1 City/County: Kittitas County Sampling Date: 6/20/2023
 Applicant/Owner: Kittitas County State: WA Sampling Point: DP-1
 Investigator(s): Jen Bader, Nicole Ogan Section, Township, Range: Section 30, Township 20 North, Range 16
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): A Lat: 47.18969096 Long: -120.88289679 Datum: NAD83HARN
 Soil Map Unit Name: Teanaway ashy loam NWI Classification: PFO

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

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

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soil Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	Is the Sampled Area within a Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No
Remarks: Depression between Airport road and hillslope.	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status															
Tree Stratum (Plot size: <u>20x20</u>)																			
1. <u><i>Pinus ponderosa</i></u>	10	Y	76.9	FACU	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75.0%</u> (A/B)														
2. <u><i>Crataegus douglasii</i></u>	3	Y	23.1	FAC															
3. _____																			
4. _____																			
_____	13	= Total Cover																	
Sapling/Shrub Stratum (Plot size: <u>15x15</u>)																			
1. <u><i>Cornus alba</i></u>	65	Y	79.3	FACW	Prevalence Index worksheet: <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>72</u></td> <td>x 2 = <u>144</u></td> </tr> <tr> <td>FAC species <u>4</u></td> <td>x 3 = <u>12</u></td> </tr> <tr> <td>FACU species <u>20</u></td> <td>x 4 = <u>80</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>96</u> (A)</td> <td><u>236</u> (B)</td> </tr> </tbody> </table> Prevalence Index = B/A = <u>2.458</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>72</u>	x 2 = <u>144</u>	FAC species <u>4</u>	x 3 = <u>12</u>	FACU species <u>20</u>	x 4 = <u>80</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>96</u> (A)	<u>236</u> (B)
Total % Cover of:	Multiply by:																		
OBL species <u>0</u>	x 1 = <u>0</u>																		
FACW species <u>72</u>	x 2 = <u>144</u>																		
FAC species <u>4</u>	x 3 = <u>12</u>																		
FACU species <u>20</u>	x 4 = <u>80</u>																		
UPL species <u>0</u>	x 5 = <u>0</u>																		
Column Totals: <u>96</u> (A)	<u>236</u> (B)																		
2. <u><i>Salix lasiandra</i></u>	7	N	8.5	FACW															
3. <u><i>Symphoricarpos albus</i></u>	5	N	6.1	FACU															
4. <u><i>Rosa woodsii</i></u>	5	N	6.1	FACU															
_____	82	= Total Cover																	
Herb Stratum (Plot size: <u>5x5</u>)																			
1. <u><i>Equisetum arvense</i></u>	1	Y	100.0	FAC	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0' <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. _____																			
3. _____																			
4. _____																			
5. _____																			
6. _____																			
7. _____																			
8. _____																			
9. _____																			
10. _____																			
11. _____																			
_____	1	= Total Cover																	
Woody Vine Stratum (Plot size: <u>15x15</u>)																			
1. <u>None</u>					Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No														
2. _____																			
_____		= Total Cover																	
% Bare Ground in Herb Stratum <u>0</u>																			
Remarks: Ground cover was dense leaf litter. One skunk cabbage and some carex (not able to identify since early in growth form with now flowers) were also present in the wetland.																			

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 ¹	Loc ²			
0-4								duff layer	
4-6	2.5Y	3/2	100						
6-18	5Y	4/1	78	5YR	4/6	25	C	PL&M	silty clay loam

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

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

<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Depleted Dark Surface (F7)	
	<input type="checkbox"/> Redox Depressions (F8)	

Indicators for Problematic Hydric Soils³:

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

Restrictive Layer (if present):

Type: None

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:
Soil Damp at surface

HYDROLOGY

Wetland Hydrology Indicators:

<u>Primary Indicators (minimum of one required; check all that apply)</u>		<u>Secondary Indicators (2 or more required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

Field Observations:

Surface Water Present? Yes No Depth (inches): _____

Water Table Present? Yes No Depth (inches): _____

Saturation Present? Yes No Depth (inches): 12

Wetland Hydrology Present? Yes No

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

Remarks:
Appears water pools from snowmelt off hillside that is impounded at this location due to road prism on downstream side of depression.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Arch and Rescue Site - Wetland 2 City/County: Kittitas County Sampling Date: 6/20/2023
 Applicant/Owner: Kittitas County State: WA Sampling Point: DP-2
 Investigator(s): Jen Bader, Nicole Ogan Section, Township, Range: Section 30, Township 20 North, Range 16
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 25
 Subregion (LRR): A Lat: 47.18978762 Long: -120.88284448 Datum: NAD83HARN
 Soil Map Unit Name: Teanaway ashy loam NWI Classification: upland

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

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

Hydrophytic Vegetation Present? <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	Is the Sampled Area within a Wetland? <input type="radio"/> Yes <input checked="" type="radio"/> No
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Remarks:
 South facing hillslope adjacent and north of wetland.

VEGETATION – Use scientific names of plants.

<u>Tree Stratum</u> (Plot size: <u>20x20</u>)	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status	Dominance Test worksheet:
1. <u><i>Pinus ponderosa</i></u>	40	Y	100.0	FACU	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)
2. _____					Total Number of Dominant Species Across All Strata: <u>5</u> (B)
3. _____					Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)
4. _____					
40 = Total Cover					
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15x15</u>)	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status	Prevalence Index worksheet:
1. <u><i>Symphoricarpos albus</i></u>	10	Y	50.0	FACU	Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u>
2. <u><i>Amelanchier alnifolia</i></u>	5	Y	25.0	FACU	FACW species <u>0</u> x 2 = <u>0</u>
3. <u><i>Rosa woodsii</i></u>	5	Y	25.0	FACU	FAC species <u>0</u> x 3 = <u>0</u>
4. _____					FACU species <u>60</u> x 4 = <u>240</u>
5. _____					UPL species <u>1</u> x 5 = <u>5</u>
20 = Total Cover					Column Totals: <u>61</u> (A) <u>245</u> (B)
Prevalence Index = B/A = <u>4.016</u>					
<u>Herb Stratum</u> (Plot size: <u>5x5</u>)	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u><i>Tragopogon dubius</i></u>	1	Y	100.0	UPL	<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation
2. _____					<input type="checkbox"/> 2 - Dominance Test is >50%
3. _____					<input type="checkbox"/> 3 - Prevalence Index is ≤3.0'
4. _____					<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5. _____					<input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹
6. _____					<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
7. _____					¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. _____					
9. _____					
10. _____					
11. _____					
1 = Total Cover					
<u>Woody Vine Stratum</u> (Plot size: <u>15x15</u>)	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status	Hydrophytic Vegetation Present?
1. <u>None</u>				#N/A	<input type="radio"/> Yes <input checked="" type="radio"/> No
2. _____					
= Total Cover					
% Bare Ground in Herb Stratum <u>0</u>					

Remarks:
 Ground cover was dense litter. See plant list of site for other species located in the uplands.

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 ¹	Loc ²		
0-2								duff layer
2-18	10YR	2/2	100					silt loam

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

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

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

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

Restrictive Layer (if present):

Type: None

Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:
Soil dry and hard to dig through

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-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

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 are present.

Attachment D. Plant List

Table 1. Plant List

Scientific Name ¹	Common Name	Western Mountain, Valleys, and Coast ²	Distribution in Cover Types	Type ³	Riparian Vegetation	Wetland	Upland
Trees							
<i>Alnus sp.</i>	Alder	Varies	Sporadic				
<i>Crataegus douglasii</i>	Douglas hawthorne	FAC	Sporadic	N	Sparse	Sparse	Sparse
<i>Pinus ponderosa</i>	Ponderosa pine	FACU	Even	N			Common
<i>Populus balsamifera</i>	Black cottonwood	FAC	Sporadic	N	Sparse	Common	
<i>Pseudotsuga menziesii</i>	Douglas fir	FACU	Sporadic	N			Sparse
<i>Amelanchier alnifolia</i>	Servicberry	FACU	Sporadic	N			Sparse
<i>Ceanothus velutinus</i>	Mountain balm		Even	N			Common
<i>Cornus sericea</i>	Redosier dogwood	FACW	Clumped	N	Common	Common	
<i>Mahonia sp.</i>	Oregon-grape	FACU	Clumped	N			Sparse
<i>Philadelphus lewisii</i>	Mock orange	FACU	Sporadic	N	Sparse		
<i>Prunus virginiana</i>	Chokecherry	FACU	Clumped	N	Sparse		
<i>Purshia tridentata</i>	Bitterbrush	UPL	Sporadic	N			Common
<i>Rosa woodsii</i>	Wood's rose	FACU	Clumped	N			Common
<i>Salix lasiandra</i>	Pacific willow	FACW	Sporadic	N		Common	
<i>Sambucus nigra sp. cerulea</i>	Blue elderberry	FAC	Sporadic	N	Sparse	Sparse	
<i>Symphoricarpos albus</i>	Common snowberry	FACU	Sporadic	N			Common
Herbs							
<i>Apocynum sp.</i>	Dogbane	Varies	Clumped	N			Sparse
<i>Balsamorhiza sagittata</i>	Arrowleaf balsamroot	UPL	Clumped	N			Sparse
<i>Cirsium arvense</i>	Canadian thistle	FAC	Clumped	I		Sparse	
<i>Collomia grandiflora</i>	Grand collomia	UPL	Sporadic	N			Sparse
<i>Crepis sp.</i>	Hawksbeard	Varies	Sporadic	N			Sparse
<i>Elymus repens</i>	Quackgrass	FAC	Even	I	Common		Common
<i>Equisetum arvense</i>	Field horsetail	FAC	Clumped	N	Common	Sparse	
<i>Fragaria virginiana</i>	Blueleaf strawberry, mountain	FACU	Clumped	N			Sparse
<i>Geranium viscosissimum</i>	Sticky purple geranium	FACU	Clumped	N			Sparse
<i>Lupinus sp.</i>	Lupine	Varies	Sporadic	N			Sparse
<i>Lysichiton americanus</i>	American skunkcabbage	OBL	Single	N		Single	
<i>Madia exigua</i>	Small tarweed	UPL	Clumped	N			Sparse
<i>Poa bulbosa</i>	Bulbous bluegrass	FACU	Even	I			Common
<i>Potentilla sp.</i>	Cinquefoil	Varies	Sporadic	N			Sparse
<i>Senecio sp.</i>	Butterweed	Varies	Sporadic	N			Sparse
<i>Vicia sp.</i>	Vetch	Varies	Sporadic	N			Sparse

1 Species identified only to genus were due to limited ability to determine species.

2 Western Mountains, Valleys, and Coast Region Indicator Status described in Table 2.

3 Type: N=Native, I=Introduced, U=Unknown because unable to identify to species and both could occur in this habitat type for Genus.

Table 1. Plant List

Indicator status	Abbreviation	Definition	Percent Occurrence in Wetlands (%)
Obligate	OBL	Occur almost always under natural conditions in wetlands.	99
Facultative Wetland	FACW	Usually occur in wetlands but occasionally found in non-wetlands.	67–99
Facultative	FAC	Equally likely to occur in wetlands and nonwetlands.	34–66
Facultative Upland	FACU	Usually occur in non-wetlands but occasionally found in wetlands.	1–33
Upland	UPL	Occur in wetlands in another region, but occur almost always under natural conditions in non-wetlands in the region specified.	1

Reference

Lichvar, R. W., N. C. Melvin, M. Butterwick, and W. N. Kirchner (Lichvar et al.). 2012. *National Wetland Plant List Indicator Rating Definitions*. Prepared for USACE Wetland Regulatory Assistance Program, Publication #ERDC/CRREL TN-12-1. July.

Attachment E. Streamflow Duration Data Form

Appendix B: Streamflow Duration Field Assessment Form

Project # / Name		Assessor																
Address			Date															
Waterway Name		Coordinates at downstream end (ddd.mm.ss)	Lat. N Long. W															
Reach Boundaries																		
Precipitation w/in 48 hours (cm)	Channel Width (m)	<input type="checkbox"/> Disturbed Site / Difficult Situation (Describe in "Notes")																
Observed Hydrology	% of reach w/observed surface flow _____																	
	% of reach w/any flow (surface or hyporheic) _____																	
	# of pools observed _____																	
Observations	Observed Wetland Plants (and indicator status):		Observed Macroinvertebrates:															
			<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Taxon</th> <th style="width: 15%;">Indicator Status</th> <th style="width: 15%;">Ephemeroptera?</th> <th style="width: 10%;"># of Individuals</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Taxon	Indicator Status	Ephemeroptera?	# of Individuals											
Taxon	Indicator Status	Ephemeroptera?	# of Individuals															
Indicators	1. Are aquatic macroinvertebrates present? <input type="checkbox"/> Yes <input type="checkbox"/> No																	
	2. Are 6 or more individuals of the Order Ephemeroptera present? <input type="checkbox"/> Yes <input type="checkbox"/> No																	
	3. Are perennial indicator taxa present? (refer to Table 1) <input type="checkbox"/> Yes <input type="checkbox"/> No																	
	4. Are FACW, OBL, or SAV plants present? (Within ½ channel width) <input type="checkbox"/> Yes <input type="checkbox"/> No																	
	5. What is the slope? (In percent, measured for the valley, not the stream) _____ %																	
Conclusions																		
	Single Indicators: <input type="checkbox"/> Fish <input type="checkbox"/> Amphibians		Finding: <input type="checkbox"/> Ephemeral <input type="checkbox"/> Intermittent <input type="checkbox"/> Perennial															

Notes: (explanation of any single indicator conclusions, description of disturbances or modifications that may interfere with indicators, etc.)

Difficult Situation:

Describe situation. For disturbed streams, note extent, type, and history of disturbance.

- Prolonged Abnormal Rainfall / Snowpack
 - Below Average
 - Above Average
- Natural or Anthropogenic Disturbance
- Other: _____

Additional Notes: (sketch of site, description of photos, comments on hydrological observations, etc.) Attach additional sheets as necessary.

Ancillary Information:

- Riparian Corridor
- Erosion and Deposition
- Floodplain Connectivity

Observed Amphibians, Snake, and Fish:

Taxa	Life History Stage	Location Observed	Number of Individuals Observed