Hop Hill Solar and Storage Project

ATTACHMENT P: WETLAND AND NON-WETLAND WATERS DELINEATION REPORT



Hop Hill Wetland and Non-Wetland Waters Delineation Report

SEPTEMBER 2022

PREPARED FOR HOHI bn LLC

PREPARED BY

SWCA Environmental Consultants

HOP HILL WETLAND AND NON-WETLAND WATERS DELINEATION REPORT TOWNSHIP 10 NORTH, RANGE 24 EAST, MULTIPLE SECTIONS AND PARCELS, BENTON COUNTY, WASHINGTON

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INTRODUCTION

SWCA Environmental Consultants (SWCA) conducted an on-site wetland and non-wetland waters delineation for HOHI, bn LLC (HOHI or Applicant), a subsidiary of BrightNight LLC. The project is located in in Benton County, Washington, approximately 11 miles north of the city of Prosser (Figure 1). The proposed solar array siting area covers approximately 11,180 acres and includes the parcels shown on Figure 2 and listed in Table 1. The solar array siting area is in Sections 7 to 11, 14, 15, 17 to 23, 26 to 28, and 33 to 35, Township 10 North, Range 24 East, Willamette Meridian. The site is west of N Crosby Road and north of W Snipes Road. The centroid latitude and longitude of the site are 46.345761 and -119.813279. Fieldwork was conducted on June 28 to July 1, 2022, by Jessalynn Spears, Wetland Scientist.

The solar array siting area is characterized by rural rangeland and agricultural lands with limited residential or commercial development. The Applicant is considering various design layouts for the solar arrays within the solar array siting area and is in the process of narrowing down the final project area (approximately 5,000 acres within the siting area), which will be based on the results of geotechnical investigations; avoidance of wetlands, waters, and other sensitive natural and cultural resources; and the overall slope and aspect of the project.

The purpose of this report is to summarize all wetlands and non-wetland waters delineated within the solar array siting area that could constrain development or require additional approvals, including all critical areas designated under Benton County's Critical Areas Ordinance (CAO) (Benton County Code [BCC] Chapter 15).

ownship	Range	Section	Parcel	Acres
10 North	24 East	07	10704000000000	617
		08	10804100000000	498
		09	10904000000000	656
		10	11004000000000 (partial)	648
		11	11004000000000 (partial)	634
		14	11304000000000	663
		15	11404000000000	574
			11504000000000	72
		17	116041000002000	673
		18	11704000000000	628
			11804100000000	3
		19	11904000000000	633
		21	12104000000000	627
		22	12204000000000	645
		23	12304000000000	661
		26	12504000000000	665
		27	12604000000000	632
		28	12704000000000	315

Table 1. Solar Array Siting Area Parcel Lot Summary

Township	Range	Section	Parcel		Acres
			128043000001000		79
			12804100000000		39
		33	13304100000000		230
		34	13404100000000		354
		35	135041000001000		419
		multiple	Road ROW		215
				Total	11,180

METHODS

The methodology used for determining the presence of wetlands and delineating wetland boundaries followed the U.S. Army Corps of Engineers (USACE) *Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008), used by both the Washington Department of Ecology (Ecology) and USACE. *The National Wetland Plant List* (USACE 2020) was used to assign wetland indicator status for the appropriate region. Each stream was visited at one to three sections to confirm presence, width, and features, and delineate a portion of the ordinary high water lines (OHMLs; minimum of 50 feet delineated). The OHWLs of the streams were spot delineated based on the *Corps' Regulatory Guidance Letter 05-05: Ordinary High Water Mark Identification* (USACE 2005). Stream mapping within the solar array siting area , once confirmed with site visits and initial delineation, was completed with digitized mapping of stream centerline and field verified widths using Google Earth imagery and ArcGIS software. Features outside the solar array siting area and within a 250-foot buffer were visually surveyed to ensure no wetland and water features were missed and ensure avoidance. Features outside the 250-foot buffer were not recorded, as they are outside the potentially buildable area and beyond all Benton County Code buffers.

Soils, vegetation, and any indicators of hydrology were recorded at six sample plot locations within the solar array siting area on standardized wetland determination data forms (Appendix A) to document site conditions. Soil colors were identified using a Munsell Soil Color Chart (X-Rite 2000). Sample plot locations and photograph locations were collected using a Juniper Geode Global Navigation Satellite System (GNSS) receiver paired with a Samsung computer tablet using Collector for ArcGIS software capable of submeter accuracy. These data were imported into geographic information system (GIS) software to produce the report maps. Ground-level site photographs are provided in Appendix B.

Per Washington Administrative Code 463-60-333 and Benton County Code (BCC) 15.04.101b, SWCA rated the delineated wetlands using the *Washington State Wetland Rating System for Eastern Washington, 2014 Update* (Hruby 2014) and determined their scores for habitat, water quality, and hydrologic functions. Wetland rating forms and figures are provided in Appendix C. Wetland categories are used to identify the wetland buffer width required to protect the functionality of each wetland (BCC 15.04.040).

Data Sources

The information presented in this report was obtained through desktop review of the following publicly available data sources, followed by a field visit to confirm wetlands and waters within the solar array siting area.

- Google Earth aerial imagery (Google Earth 2022)
- Benton County Code (Benton County 2022)
- Natural Resources Conservation Service (NRCS) soils data (NRCS 2022a)
- National Oceanic and Atmospheric Administration (NOAA) WETS and precipitation data. (NOAA 2022)
- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) online mapping tool (USFWS 2022a)
- USFWS Critical Habitat for Threatened and Endangered Species online mapping tool (USFWS 2022b)
- USFWS National Wetlands Inventory (NWI) data (USFWS 2022c)
- Washington State Parcel data (Washington State Geospatial Portal 2022)
- Washington Department of Fish and Wildlife (WDFW), Priority Habitats and Species Maps (WDFW 2022)
- Washington Department of Natural Resources (WADNR) Forest Practices Application Review System (FPARS) mapper (WADNR 2022)
- U.S. Environmental Protection Agency (EPA) Ecoregions (EPA or Thorson et al. 2003)
- U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map

SITE DESCRIPTION

Topography and Plant Community

The topography of the solar array siting area consists of is rolling hillslopes generally facing southwest with elevations highest in the northeastern portion of the solar array siting area (2,300 feet above mean sea level [amsl]) and lowest (1,200 amsl) in the southwestern portion. The solar array siting area encompasses many undeveloped parcels, all which have been used as cattle pasture and rangeland. Three single-family dwellings and outbuildings and facilities associated with the cattle ranch are situated at the intersection of four parcels.

The EPA Level III ecoregion encompassing the solar array siting area is the Columbia Plateau, which is typically dominated by arid sagebrush steppe and grassland (Thorson et al. 2003). The USGS National Landcover Dataset (NLCD) (USGS 2019), and field observations from previous habitat surveys (ERM 2021; SWCA 2022) confirmed the entire solar array siting area and the land surrounding is dominated by weedy sagebrush steppe and grassland. Dominant species include big sagebrush (*Artemisia tridentata*), downy cheatgrass (*Bromus tectorum*), and filaree (*Erodium cicutarium*).

Precipitation

The closest WETS climate station is the Prosser, Washington, station (NOAA 2022). Observed precipitation for the water year starting October 1, 2021, compared to normal from 1991 to 2022 (Appendix D), were slightly above normal (Table 2). Although the precipitation for the 3 months prior to the field visit was well above normal, the precipitation for June was 0.54 inch above normal and the preceding 2 weeks was 0.16 inch below normal. Given the near normal precipitation in general and slightly below normal precipitation just before the field visit, the earlier unusual precipitation patterns likely did not affect the SWCA scientist's ability to observe hydrology during the field visit.

Month	_	30% Chan	ce Will Have	Observed	Within Normal Range?	
	Average (inches)	Less Than	More Than	Precipitation (inches)		
		(inches)		(
October	0.77	0.37	0.95	0.81	105%	
November	0.86	0.53	1.07	1.57	183%	
December	1.33	0.72	1.56	0.87	65%	
January	1.24	0.68	1.32	0.48	39%	
February	0.90	0.46	1.01	0.07	8%	
March	0.69	0.39	0.77	0.63	91%	
April	0.74	0.27	0.76	1.40	189%	
Мау	0.88	0.40	0.89	1.70	193%	
June	0.68	0.29	1.22	1.22	179%	
Water Year through June 30, 2022	8.09	4.11	9.04	8.75	108%	

Note: Monthly averages based on the climate period 1991–2020. Source: NOAA (2022).

Existing Wetland Mapping

There are no mapped wetlands and several mapped streams within the solar array siting area according to the USFWS (2022c) NWI (Figure 3). Stream presence for a majority of mapped streams was confirmed by field survey. A couple of mapped stream features in the south-central portion of the site did not to meet the definition of stream (Appendix B). The three wetlands identified in this report were not mapped by publicly available sources.

Soils

According to the NRCS Benton County, Washington, area soil survey map (NRCS 2022a), there are 26 soil units within the solar array siting area (Table 3; Figure 4). None are hydric, but one has hydric inclusions: Scooteney silt loam has 2% Wamba hydric inclusions, is a well-drained soil, and is not conducive to supporting wetlands. Two soils are mapped where wetlands were identified: Finley stony fine sandy loam and Shano silt loam. They both have 0% hydric inclusions, are well-drained soils, and are not known to form wetlands (NRCS 2022b).

Map Unit Symbol	Map Unit Name	Hydric	Hydric Inclusion
BmAB	Burke silt loam, 0 to 5 percent slopes	No	No
BmB	Burke silt loam, 2 to 5 percent slopes	No	No
BmC	Burke silt loam, 5 to 8 percent slopes	No	No
BmE3	Burke silt loam, 15 to 30 percent slopes, severely eroded	No	No
BnB	Burke silt loam, shallow, 0 to 5 percent slopes	No	No
BoD2	Burke very fine sandy loam, 0 to 15 percent slopes, eroded	No	No
FfE	Finley stony fine sandy loam, 0 to 30 percent slopes	No	No
KnE	Kiona very stony silt loam, 0 to 30 percent slopes	No	No
KnF	Kiona very stony silt loam, 30 to 65 percent slopes	No	No
ReB	Ritzville silt loam, 0 to 5 percent slopes	No	No
ReE3	Ritzville silt loam, 15 to 30 percent slopes, severely eroded	No	No
ReF	Ritzville silt loam, 30 to 65 percent slopes	No	No
RfD2	Ritzville very fine sandy loam, 0 to 15 percent slopes, eroded	No	No
ScAB	Scooteney silt loam, 0 to 5 percent slopes	No	Wamba
ShAB	Shano silt loam, 0 to 5 percent slopes	No	No
ShB	Shano silt loam, 2 to 5 percent slopes	No	No
ShD	Shano silt loam, 8 to 15 percent slopes	No	No
SmB	Shano silt loam, deep, 2 to 5 percent slopes	No	No
SmC	Shano silt loam, deep, 5 to 8 percent slopes	No	No
SnD2	Shano very fine sandy loam, 0 to 15 percent slopes, eroded	No	No
SnE2	Shano very fine sandy loam, 15 to 30 percent slopes, eroded	No	No
SsE	Starbuck rocky silt loam, 5 to 45 percent slopes	No	No
WsB	Willis silt loam, 0 to 5 percent slopes	No	No
WsE3	Willis silt loam, 15 to 30 percent slopes, severely eroded	No	No
WsF	Willis silt loam, 30 to 65 percent slopes	No	No
WtD	Willis silt loam, shallow, 0 to 15 percent slopes	No	No

Table 3. Soil Map Units

Source: NRCS (2022a, 2022b).

RESULTS

Uplands

Upland areas were dominated by shrubsteppe and grassland. Dominant plant species observed in upland areas included big sagebrush, downy cheatgrass, filaree, wall barley (*Hordeum murinum*), Great Basin lyme grass (*Leymus cinereus*), tall hedge-mustard (*Sisymbrium altissimum*), and western tansymustard (*Descurainia pinnata*), with some scattered lupine (*Lupinus* sp.), phlox (*Phlox* spp.), desert-parsley (*Lomatium* sp.), and goosefoot (*Chenopodium* sp). Soils were dark brown silt loam with no redoximorphic features and very rocky, with rock refusal around 6 inches below ground surface. Soils were dry and displayed no primary or secondary indicators of hydrology.

Wetlands

Three wetlands were observed within the solar array siting area (Figures 5 to 13).

Wetland A (0.01 acre / 556.59 square feet)

Wetland A (Figure 14) is classified as a palustrine emergent wetland (PEM) using the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979), and Riverine/Category III using the *Washington State Wetland Rating System for Eastern Washington* (Hruby 2014). Wetland A's hydrology is artificial, provided by cattle water troughs that are fed by a pipe that exits the ground and continuously drips into the northwesternmost trough, flows through the subsequent troughs, and slowly drips into the wetland from an exit pipe. The wetland extends from the troughs along a stream bed depression until water saturation dries and can no longer support wetland vegetation.

Wetland A vegetation was dominated by American-brooklime (*Veronica americana*) and spotted lady'sthumb (*Persicaria maculosa*). Soils in the wetland displayed the Redox Dark Surface (F6) hydric soil indicator. Wetland hydrology indicators included Surface Water (A1) and Saturation (A3) to the surface. Two small (less than 1-foot-diameter) surface water pools were identified under emergent vegetation cover with lesser duckweed (*Lemna minor*) in the water; the remainder of the wetland was saturated to the surface. The wetland boundary is defined by a distinct change in slope, elevation, and plant community, as well as a change in soils and hydrology.

Wetland B (0.03 acre / 1,499.51 square feet)

Wetland B (Figure 15) is classified as PEM (Cowardin et al. 1979), and Riverine/Category III (Hruby 2014). Wetland B's hydrology is artificial, provided by cattle water troughs that are fed by a pipe that exits the ground and continuously drips into the northernmost trough, flows through the subsequent troughs, and slowly drips into the wetland from an exit pipe. The wetland extends from the troughs along a stream bed depression until water saturation dries and can no longer support wetland vegetation.

Wetland B vegetation was dominated by American-brooklime and spotted lady's-thumb. Soils in the wetland were problematic, with almost 90% angular gravels with silt in between, and rock refusal at 2 inches. Therefore, the procedure for problematic soils was followed: 1) hydrophytic vegetation community presence was recorded, 2) primary indicators of hydrology were recorded, and 3) landscape setting in the stream bed that was appropriate for wetland formation was confirmed. Due to finding both angular and rounded gravels and evidence nearby of gravel reinforcement of stream banks it is presumed that additional gravels intended for bank reinforcement have disturbed the wetland soil, obscuring scientists' ability to observe the soil profile. This soil also likely qualifies as 4.b.3 Vegetated Sand and Gravel Bars within Floodplains, due to the wetland's location in the very rocky stream bed of an ephemeral portion of Spring Creek. This, in addition to the similarity to Wetland A, which did have hydric soil indicators, qualifies the soil to be considered hydric. Wetland hydrology indicators included Surface Water (A1), High Water Table (A2), and Saturation (A3) to the surface. Three small (less than 1-foot-diameter) surface water pools were identified under emergent vegetation cover with lesser duckweed in the water; the remainder of the wetland was saturated to the surface. The wetland boundary is defined by a distinct change in slope, elevation, and plant community, as well as a change in soils and hydrology.

Wetland C (0.03 acre / 1,144.57 square feet)

Wetland C (Figure 16) is classified as PEM (Cowardin et al. 1979), and Riverine/Category IV (Hruby 2014). Hydrology appears to be provided subsurface from a canal pipe that runs underground to connect

open water canals to the north and south of the wetland, parallel to the gravel road. Wetland C lies entirely within the OHWL of Stream E, which flows from the northeast to the southwest when water is present.

Wetland C vegetation was dominated by reed canary grass (*Phalaris arundinacea*) and tall scouring-rush (*Equisetum hyemale*). Soils in the wetland displayed the Redox Dark Surface (F6) hydric soil indicator. Wetland hydrology indicators included High Water Table (A2) and Saturation (A3) to the surface, with surface water visible 6 inches to the south of the wetland sample plot.

Waters

Seventeen streams and tributaries were delineated within the solar array siting area (Table 4) including one named stream, Spring Creek (see Figures 5 to 13).

Stream ID	Length (linear feet / miles)			
Canal 1	2,853.67 / 0.54			
Spring Creek	18,222.82 / 3.45			
Spring Creek Tributary 1	7,490.30 / 1.42			
Spring Creek Tributary 2	7,775.12 / 1.47			
Spring Creek Tributary 3	5,357.14 / 1.01			
Spring Creek Tributary 4	1,515.64 / 0.29			
Stream A	442.35 / 0.08			
Stream B	784.14 / 0.15			
Stream C	477.67 / 0.09			
Stream D	4,230.47 / 0.80			
Stream E	14,994.92 / 2.84			
Stream E Tributary 1	6,895.69 / 1.31			
Stream E Tributary 2	9,344.50 / 1.77			
Stream E Tributary 3	5,661.03 / 1.07			
Stream E Tributary 4	7,153.89 / 1.35			
Stream F	3,921.57 / 0.74			
Stream F Tributary 1	789.29 / 0.15			
Stream G	2,397.60 / 0.45			

Table 4. Waters with Ordinary High Water Line Indicators Observed in the Solar Array Siting Area

Waters on site generally had the same width of 1 to 3 feet, with the exception of Spring Creek and Stream E, which had wider stream beds, between 10 and 30 feet wide, and braided channels below the OHWL. Streams flowed from the north-northeast to the south-southwest and were all dry at the time of survey. The streams were all classified as ephemeral based on the lack of submerged aquatic vegetation, obligate (OBL) wetland vegetation, or facultative wetland (FACW) vegetation within the stream channel. Substrate within the stream beds are silt and rounded cobbles. Each OHWL was delineated based on the bed and bank topography, natural scour line impressed on the bank, sediment sorting, and changes in plant community. Vegetation in the stream beds was downy cheatgrass and filaree, and a clear difference

in density was seen between the stream beds and riparian areas surrounding the streams and the big sagebrush–dominated stream banks.

Two sections of one canal exist in the far west edge of the solar array siting area. The canal enters the site from two points in the west, flowing east and then toward Wetland C, and is not seen resurfacing in the solar array siting area. The canal is approximately 4 feet wide, with silt substrate and dense reed canary grass, lamp rush (*Juncus effusus*), and blue grass (*Poa* sp.) lining the banks.

No fish-bearing streams are present in the solar array siting area. Waters buffers are 50 feet for streams with adjacent slopes of less than 10%, and 100 feet on parcels with streams with adjacent slopes of 10% or greater (BCC 15.15.40-2).

Wetland Rating and Buffer

Wetland rating forms and figures are provided in Appendix C. Wetlands A and B are rated as emergent riverine Category III wetlands and Wetland C is rated as emergent riverine Category IV wetland. Overall, the functionality of the wetlands is limited by the potential of the solar array siting area and landscape to provide functions due to the highly disturbed setting, simple structure, and low plant diversity of the wetlands. The site potentials of Wetlands A and B are rated as low for improving water quality and habitat, and moderate for hydrologic function; landscape potential is moderate for improving water quality and hydrologic, and low for habitat. The total habitat score of Wetlands A and B is 4. Wetland C's site potential and landscape potential are both rated as moderate for improving water quality and hydrologic function and low for habitat. Wetland C's total habitat score is 4. None of the wetlands have special characteristics. The buffer for Wetlands A and B is 60 feet and for Wetland C is 40 feet (BCC 15.04.040-1).

CONCLUSION

Three wetlands and 19 miles of ephemeral stream, including the named Spring Creek, were identified within the solar array siting area. Jurisdictional determination is the responsibility of the regulatory agencies.

All impacts are proposed to be avoided and would be well outside existing buffers. Any impacts to jurisdictional wetlands and/or buffers will require review by USACE, Ecology, and/or Benton County.

REQUIRED DISCLAIMER

This report documents the investigation, best professional judgment, and conclusions of the investigators. It is correct and complete to the best of our knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by Ecology.

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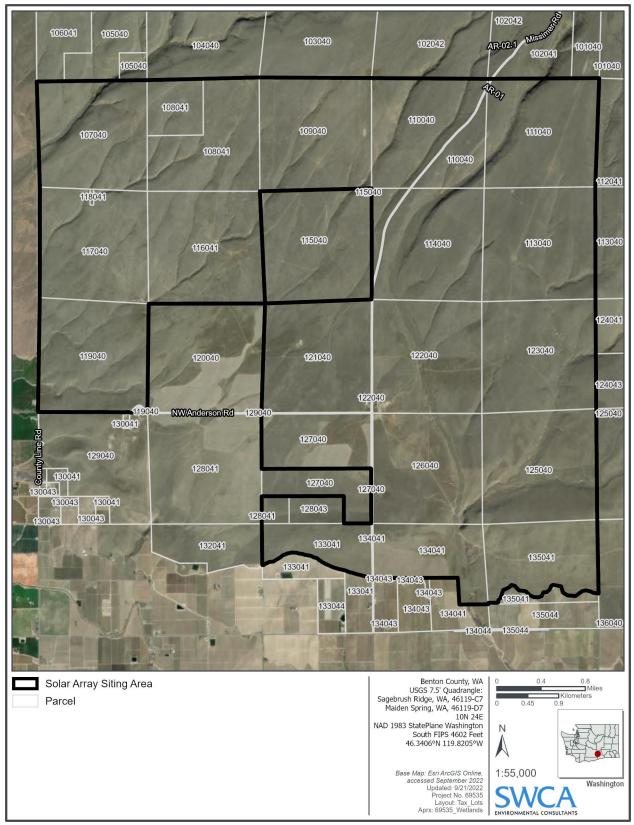


Figure 1. Parcel map (aerial base).

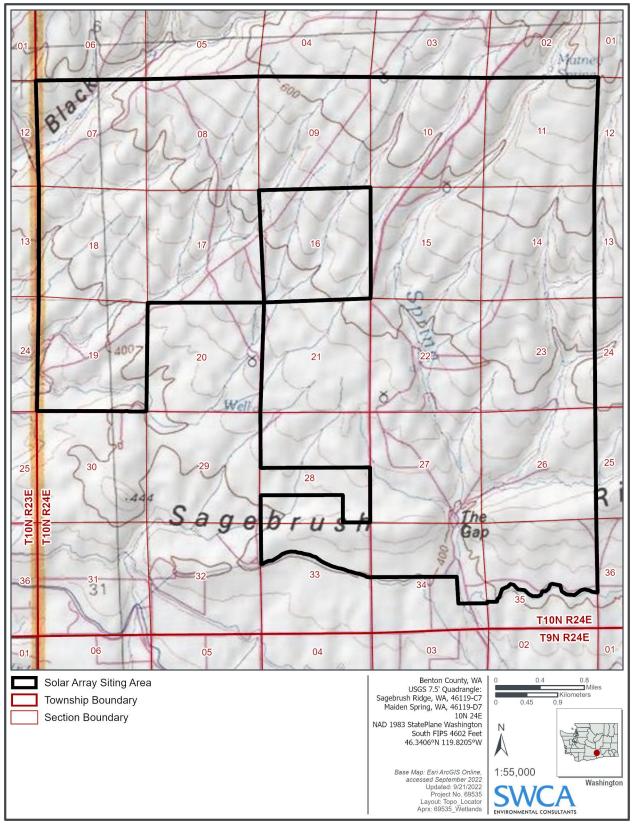


Figure 2. Parcel map (paper base).

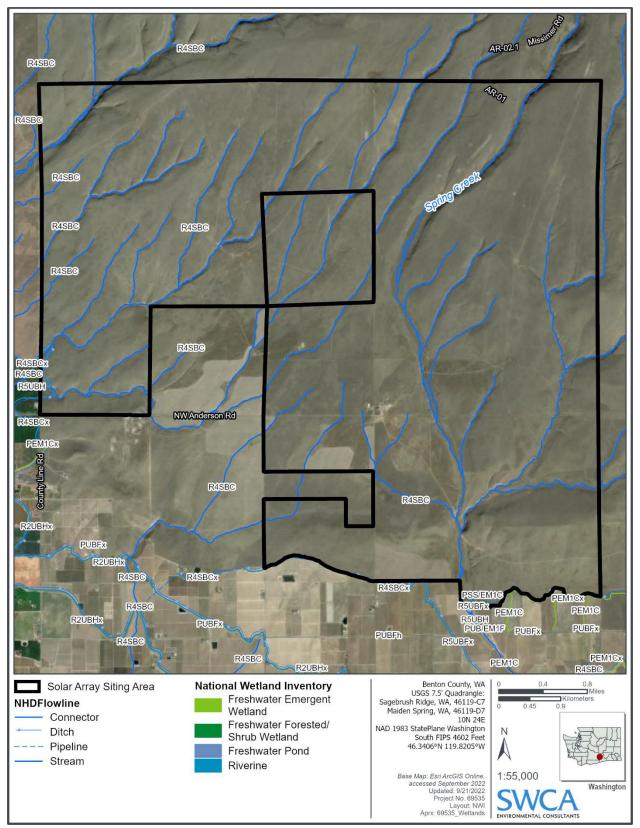


Figure 3. National Wetlands Inventory map.

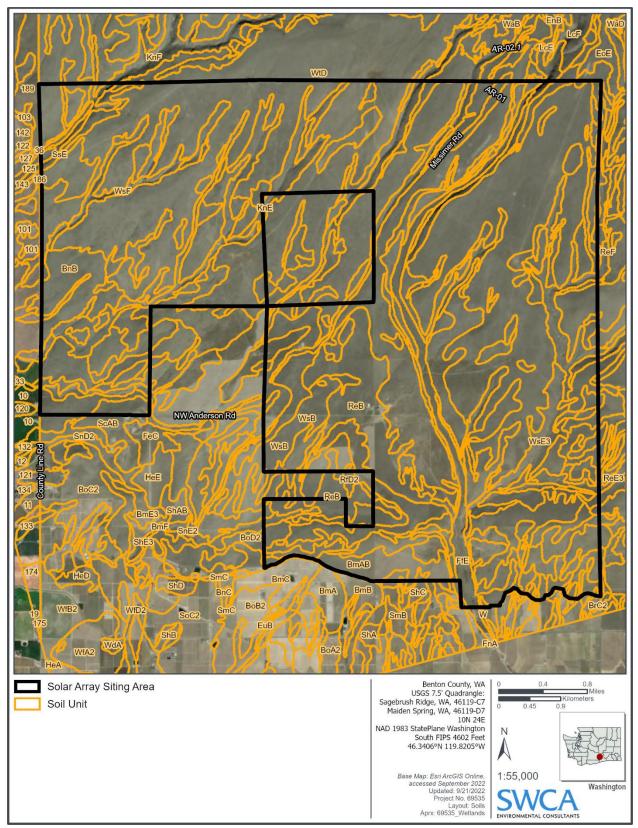


Figure 4. Soils map.

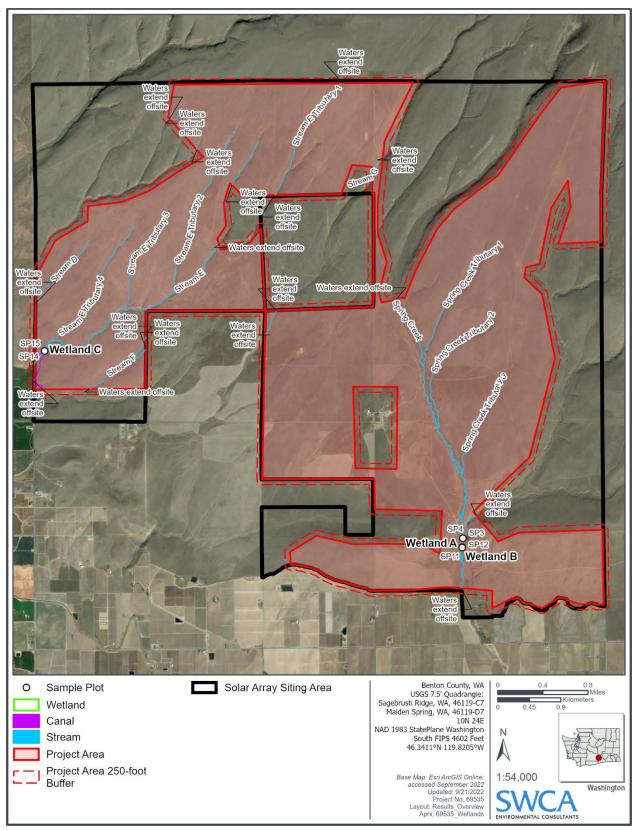


Figure 5. Wetland and other waters delineation overview map.

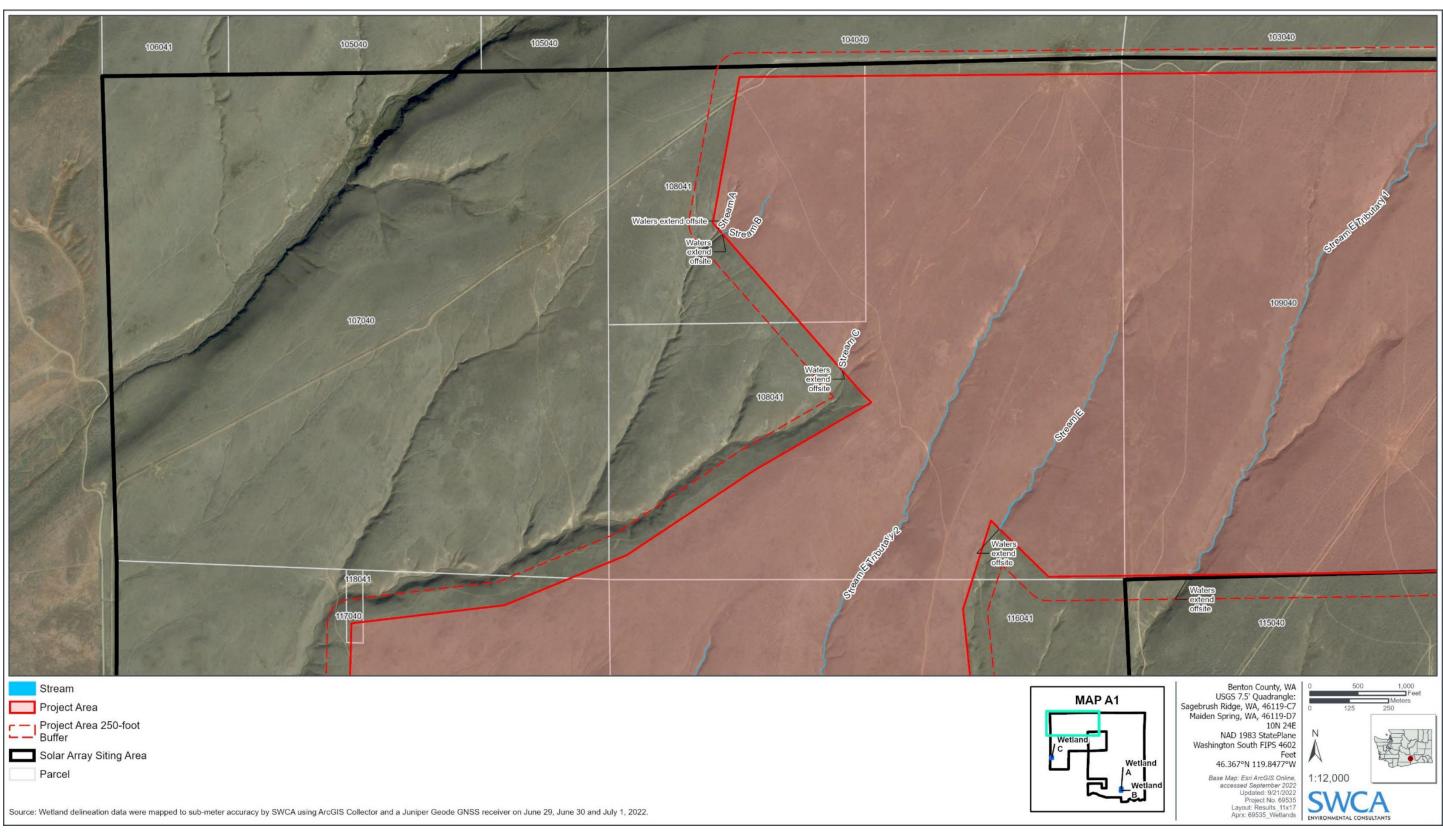


Figure 6. Wetland and other waters delineation results map A1.



Figure 7. Wetland and other waters delineation results map A2.

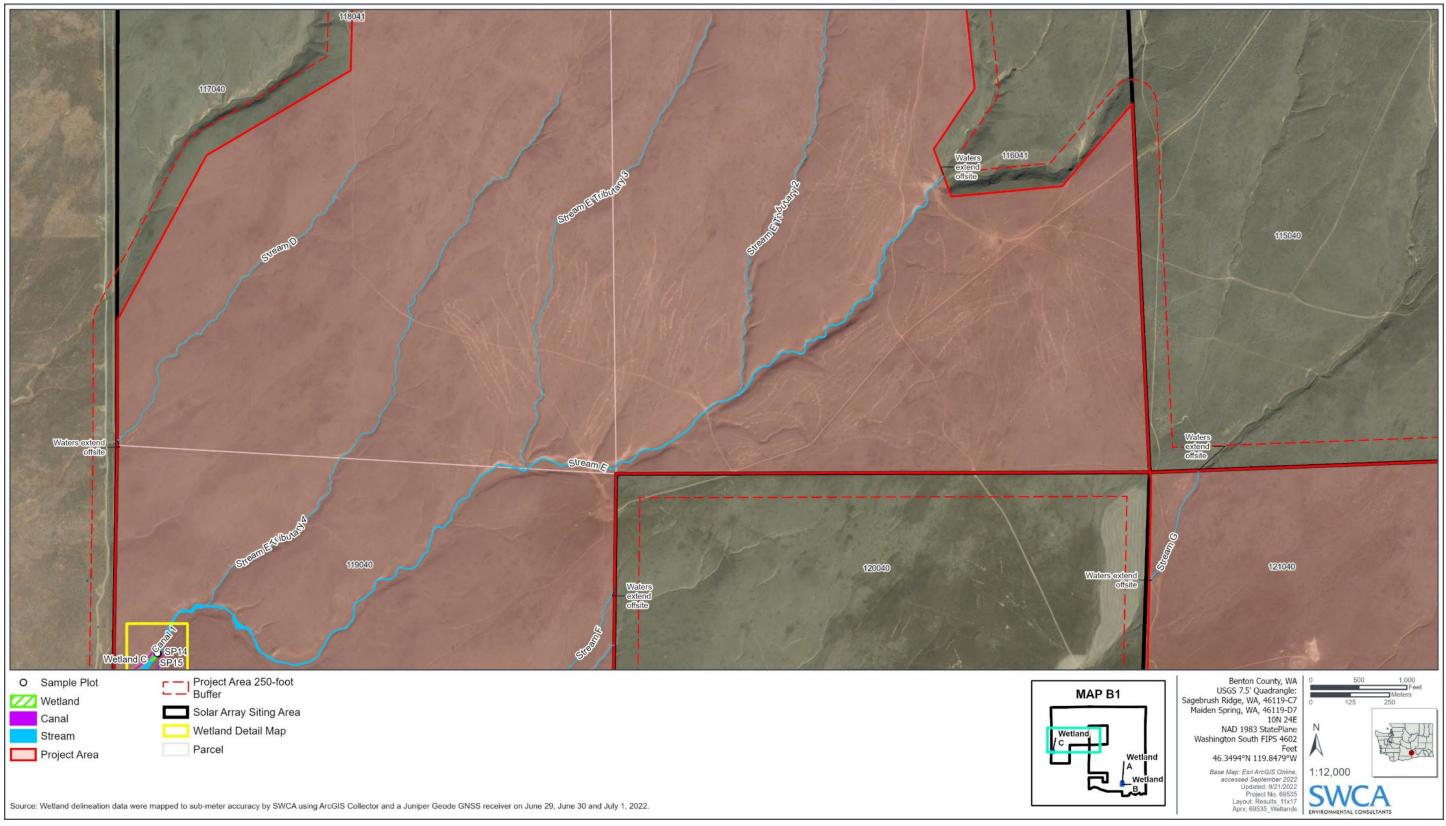


Figure 8. Wetland and other waters delineation results map B1.



Figure 9. Wetland and other waters delineation results map B2.

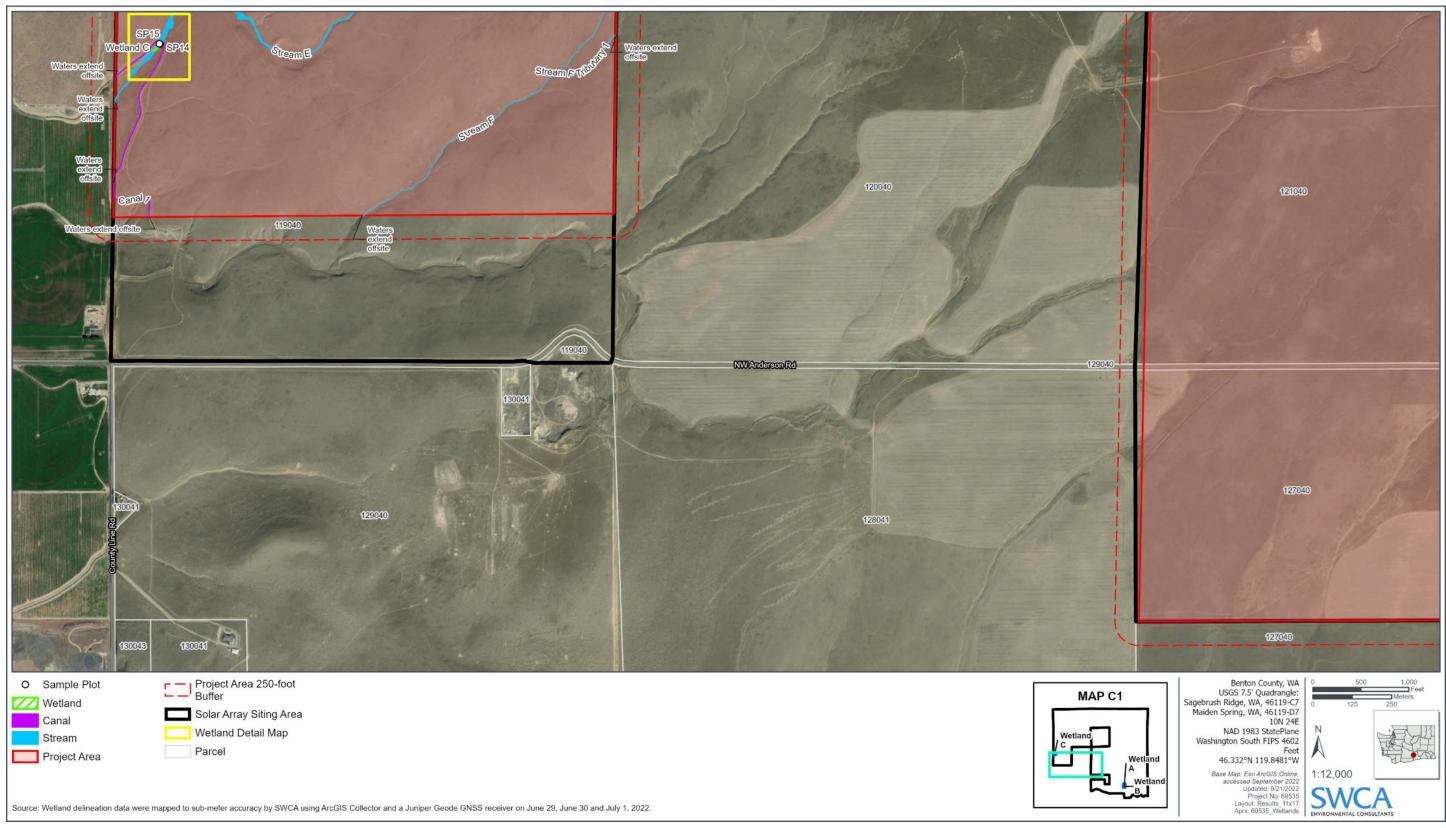


Figure 10. Wetland and other waters delineation results map C1.

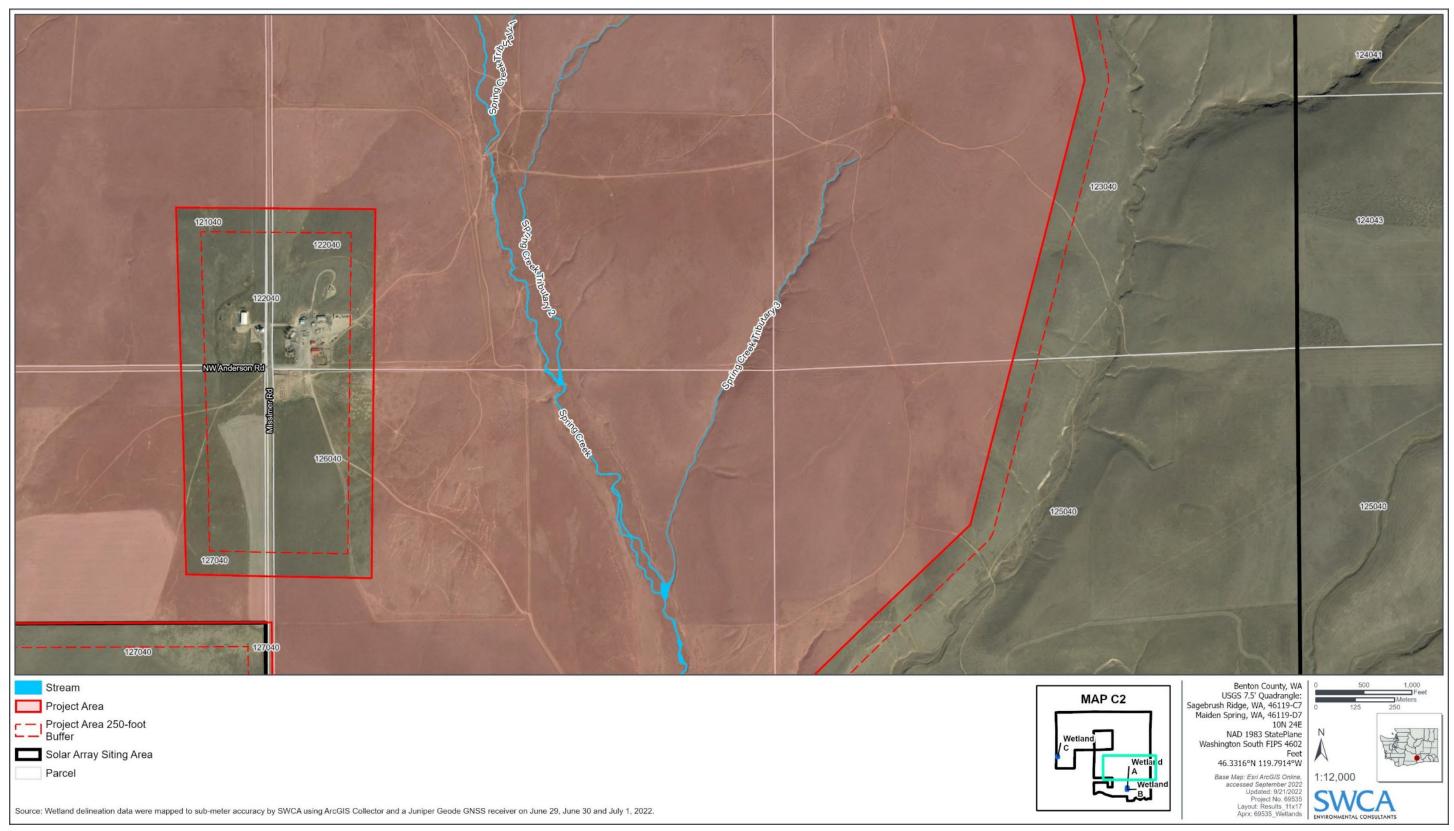


Figure 11. Wetland and other waters delineation results map C2.

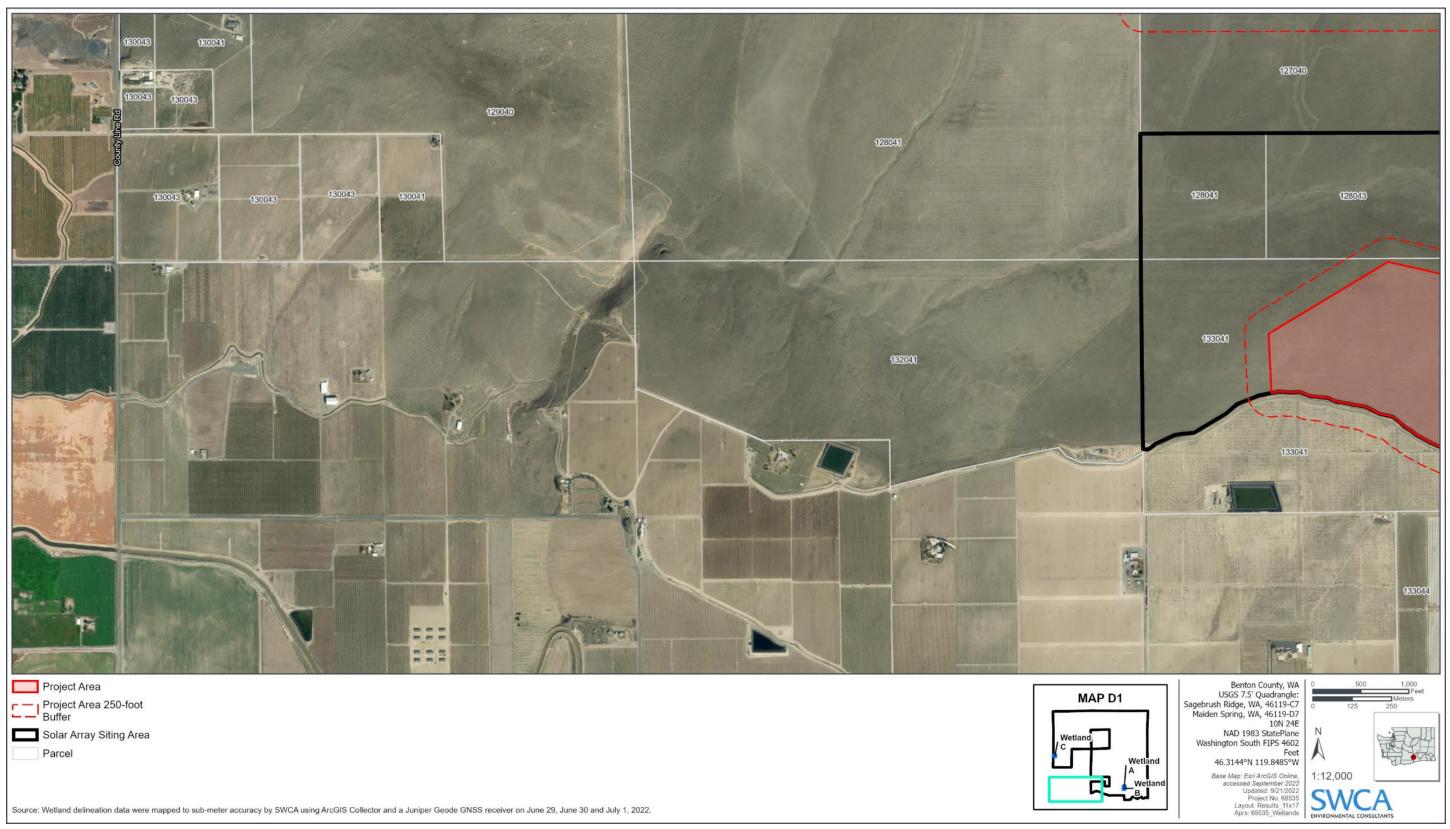


Figure 12. Wetland and other waters delineation results map D1.

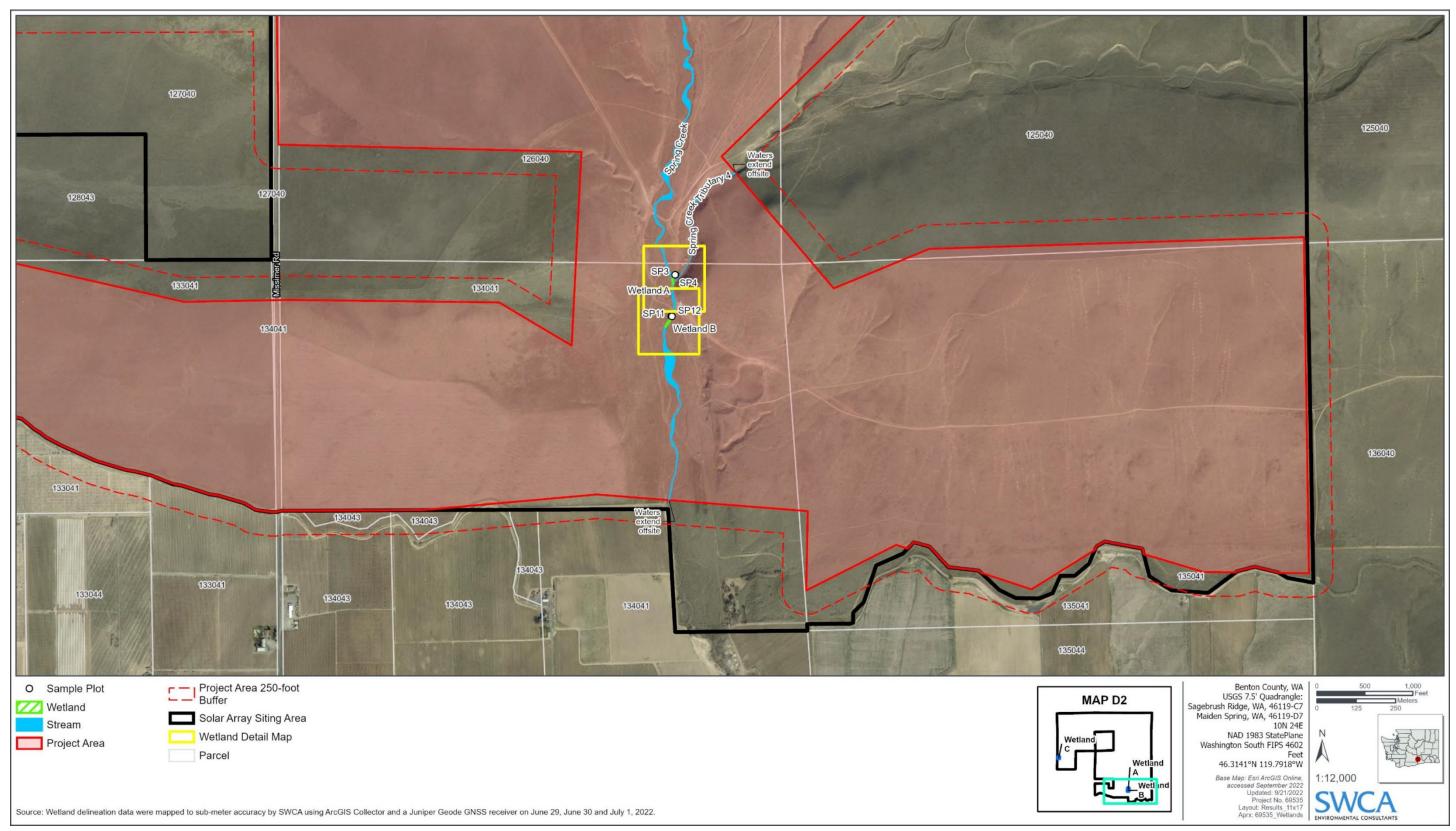


Figure 13. Wetland and other waters delineation results map D2.

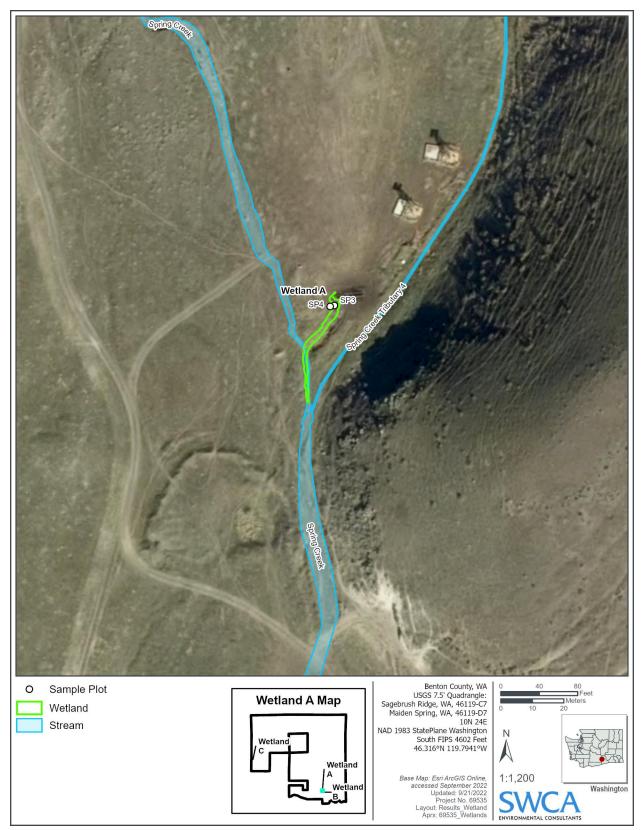


Figure 14. Wetland A results map.

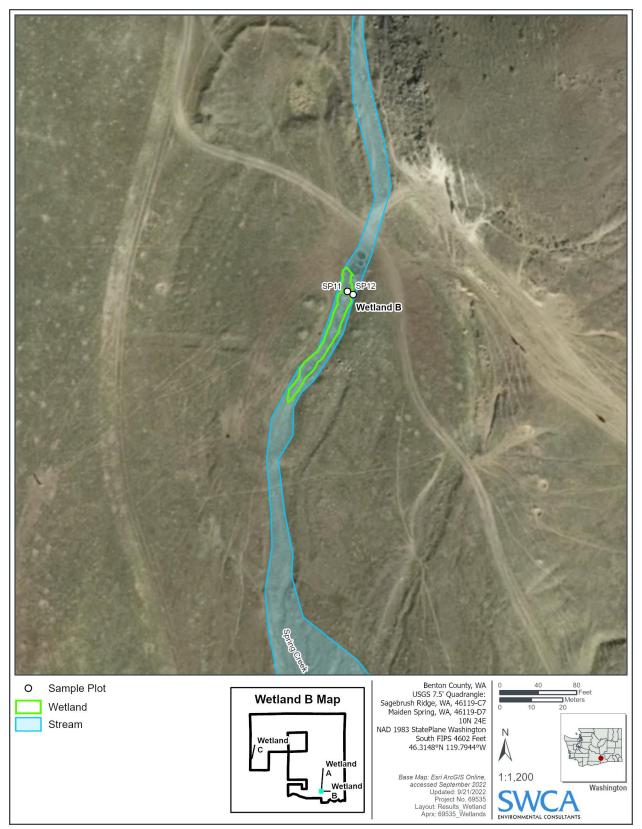


Figure 15. Wetland B results map.

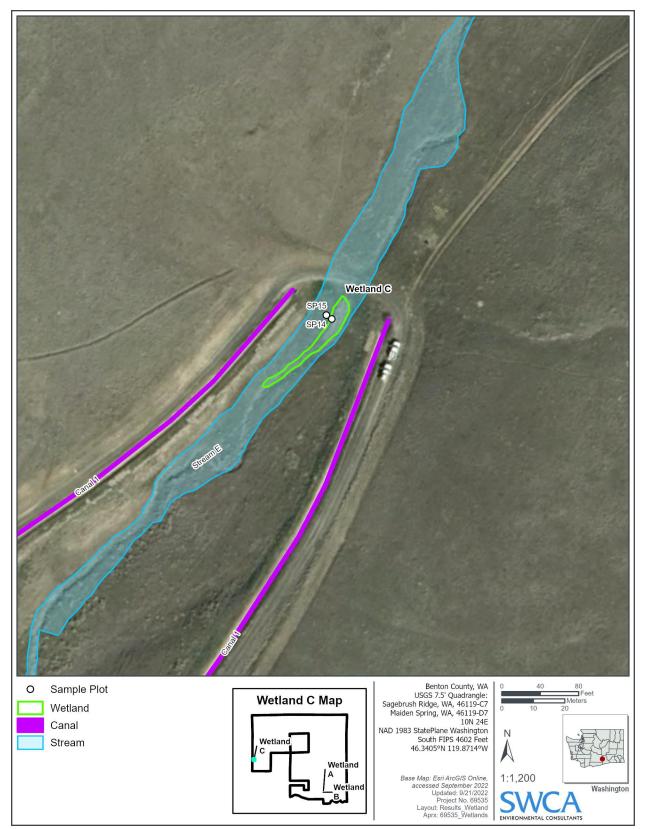


Figure 16. Wetland C results map.

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Appendix A

Wetland Determination Data Forms

Project/Site: Hop Hill Wetland Delineation		City/County:	Benton Count	У	Sampling Date: 6/29/20)2 <u>2</u>
Applicant/Owner: HOHI				State: OR	Sampling Point:	SP3
Investigator(s): Jessalynn Spears		Section, T	rownship, Range	e: T10NR24E		
Landform (hillslope, terrace, etc.): depression			Local relief	(concave, convex, none):	concave Slope (%	%): 1
Subregion (LRR): B, Columbia/Snake River Plateau	u	Lat: <u>46.316099</u>	Lon	g: <u>-119.794077</u>	Datum: NAD 19	983
Soil Map Unit Name: Finley stony fine sand	y loam, 0 to 30	percent slopes	<u> </u>	NWI	classification:	
Are climatic / hydrologic conditions on the site typical	I for this time of		Yes	s X No	(If no, explain in Re	marks)
	Hydrology	significantly di		re "Normal Circumstan	· · ·	X_No
	Hydrology	naturally prob		f needed, explain any a		
SUMMARY OF FINDINGS – Attach site			point locati	ons, transects, in	nportant features, o	etc.
Hydrophytic Vegetation Present? Yes		No	la tha Samal			
Hydric Soil Present? Yes		No	Is the Sampl			
Wetland Hydrology Present? Yes		No	within a Wet	liand? Yes	<u>X No</u>	
Precipitation prior to fieldwork: 0.1 inch in prior t Remarks: Depression, low spot where water outflows continuor		ed troughs.				
VEGETATION						
	Absolute	Dominant	Indicator	Dominance Test wo		
<u>Tree Stratum</u> (Plot size: <u>30' r</u>)	<u>% Cover</u>	Species?	<u>Status</u>	Number of Dominant		
1.				That Are OBL, FACV	N, or FAC: 2	(A)
2.						
3				Total Number of Don	ninant	
4				Species Across All S	Strata: 2	(B)
	0% =	Total Cover				
Sapling/Shrub Stratum (Plot size: <u>10' r</u>)				Percent of Dominant	•	
1.				That Are OBL, FACV	N, or FAC: <u>100%</u>	(A/B)
2.				Prevalence Index w		
3				Total % Cover o		
4					50 x 1 = 50	0
5						00
	0% =	Total Cover			0 x 3 = 0	
<u>Herb Stratum</u> (Plot size: <u>5' r</u>)					0 x 4 = 0)
1. Veronica americana	50%	Yes	OBL	· · · ·	0 x 5 = 0	-
2. Persicaria maculosa	50%	Yes	FACW		100 (A) 15	
3				Prevalence Inde	· · · · · · · · · · · · · · · · · · ·	<u>I</u>
4				Hydrophytic Vegeta		
5					or Hydrophytic Vegetation	
6				X 2 - Dominance T		
7				3 - Prevalence Ir		
8					al Adaptations ¹ (Provide s	
9					irks or on a separate shee	et)
10					-Vascular Plants ¹	
11				-	Irophytic Vegetation ¹ (Exp	,
<u>Woody Vine Stratum</u> (Plot size: <u>10' r</u>)	100% =	Total Cover		¹ Indicators of hydric s be present.	soil and wetland hydrolog	y must
1				Hydrophytic		
	0% =	Total Cover		Vegetation	Yes X No	
% Bare Ground in Herb Stratum 0%				Present?		_
Remarks: Plot adjusted to wetland topographic area.				Entere	ed by: <u>KS</u> QC by: JS	3

SOIL

Depth (inches)					confirm the			
(inches)	Matri	x		Redox Fea	itures			
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-8	10YR 2/1	95	7.5YR 2.5/3	5	С	М	SaCL	Saturated
8-10.5	2.5Y 2.5/1	100					LS	Saturated
								Rocky
				·				
								·
	·			······				<u></u>
								- <u> </u>
						2		<u> </u>
			uced Matrix CS=Cov		and Grains.		Pore Lining, M=Matr	
•		e to all LRRs	, unless otherwise	noted.)			or Problematic Hydri	c Soils':
Histosol (A1))	•	Sandy Redox (S	35)		2 cm Mu	ck (A10)	
Histic Epiped	don (A2)	-	Stripped Matrix	(S6)		Red Pare	ent Material (TF2)	
Black Histic ((A3)		Loamy Mucky M	/lineral (F1) (excep	ot MLRA 1)	Very Sha	llow Dark Surface (T	F12)
Hydrogen Su	ulfide (A4)	-	Loamy Gleyed N	Matrix (F2)		Other (E	xplain in Remarks)	
Depleted Bel	low Dark Surface (A	411)	Depleted Matrix	: (F3)				
Thick Dark S	Surface (A12)	-	X Redox Dark Su	rface (F6)		³ Indicators of	hydrophytic vegetation	on and
Sandy Muck	y Mineral (S1)		Depleted Dark S	Surface (F7)		wetland hy	drology must be prese	ent,
Sandy Gleye	ed Matrix (S4)		Redox Depress	ions (F8)		unless dist	urbed or problematic.	
	10.5, soil very high i	•	loam or loamy; co =	coarse; f = fine; vf	= very fine; +	- = heavy (more	clay); - = light (less cl	ay)
Wetland Hydrold								
-								
	rs (minimum of one	required: che	eck all that apply)			Secondary In	dicators (2 or more r	
		required; che	eck all that apply)		nt MI DA		dicators (2 or more re	<u> </u>
X Surface Wate	er (A1)	required; che	Water-Stained I	Leaves (B9) (exce	pt MLRA	Water-St	ained Leaves (B9) (N	<u> </u>
High Water T	er (A1) Table (A2)	required; che	Water-Stained L 1, 2, 4A, and	4B)	pt MLRA	Water-St 4A, an	ained Leaves (B9) (N I d 4B)	<u> </u>
High Water T X Saturation (A	r (A1) Table (A2) A3)	required; che	Water-Stained I 1, 2, 4A, and Salt Crust (B11)	4B)	pt MLRA	Water-St 4A, a n Drainage	ained Leaves (B9) (N I d 4B) Patterns (B10)	ILRA 1, 2,
High Water T X Saturation (A Water Marks	er (A1) Table (A2) A3) s (B1)	required; cha	Water-Stained I 1, 2, 4A, and Salt Crust (B11) Aquatic Invertet	4B)) prates (B13)	pt MLRA	Water-St 4A, an Drainage Dry-Seas	ained Leaves (B9) (N I d 4B) Patterns (B10) son Water Table (C2)	ILRA 1, 2,
High Water T X Saturation (A Water Marks Sediment De	rer (A1) Table (A2) A3) s (B1) eposits (B2)	required; che	Water-Stained L 1, 2, 4A, and Salt Crust (B11) Aquatic Invertet Hydrogen Sulfid	4B)) prates (B13) de Odor (C1)		Water-St 4A, an Drainage Dry-Seas Saturatio	ained Leaves (B9) (N d 4B) Patterns (B10) son Water Table (C2) n Visible on Aerial Im	ILRA 1, 2,
High Water T X Saturation (A Water Marks Sediment De Drift Deposits	er (A1) Table (A2) A3) s (B1) eposits (B2) s (B3)	required; che	Water-Stained I 1, 2, 4A, and Salt Crust (B11) Aquatic Invertet Hydrogen Sulfid Oxidized Rhizos	4B)) prates (B13) le Odor (C1) spheres along Livir		Water-St 4A, an Drainage Dry-Seas Saturatio	ained Leaves (B9) (N d 4B) Patterns (B10) son Water Table (C2) n Visible on Aerial Im ohic Position (D2)	ILRA 1, 2,
High Water T X Saturation (A Water Marks Sediment De	er (A1) Table (A2) A3) s (B1) eposits (B2) s (B3)	required; cha	Water-Stained I 1, 2, 4A, and Salt Crust (B11) Aquatic Inverted Hydrogen Sulfid Oxidized Rhizos Presence of Re	4B) prates (B13) le Odor (C1) spheres along Livir duced Iron (C4)	ng Roots (C3	Water-St 4A, an Drainage Dry-Seas Saturatio	ained Leaves (B9) (N d 4B) Patterns (B10) son Water Table (C2) n Visible on Aerial Im	ILRA 1, 2,
High Water T X Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or (Iron Deposits	er (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5)	required; cha	Water-Stained I 1, 2, 4A, and Salt Crust (B11) Aquatic Inverted Hydrogen Sulfid Oxidized Rhizos Presence of Re	4B)) prates (B13) le Odor (C1) spheres along Livir	ng Roots (C3	Water-St 4A, an Drainage Dry-Seas Saturatio Geomorp Shallow	ained Leaves (B9) (N d 4B) Patterns (B10) son Water Table (C2) n Visible on Aerial Im ohic Position (D2)	ILRA 1, 2,
High Water T X Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or (er (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5)	required; che	Water-Stained I 1, 2, 4A, and Salt Crust (B11) Aquatic Invertet Hydrogen Sulfid Oxidized Rhizos Presence of Re Recent Iron Rec	4B) prates (B13) le Odor (C1) spheres along Livir duced Iron (C4)	ng Roots (C3)	Water-St 4A, an Drainage Dry-Seas Saturatio Geomorp Shallow A FAC-Neu	ained Leaves (B9) (N d 4B) Patterns (B10) son Water Table (C2) n Visible on Aerial Im ohic Position (D2) Aquitard (D3)	agery (C9)
High Water T X Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or 0 Iron Deposits Surface Soil	er (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5)		Water-Stained I 1, 2, 4A, and Salt Crust (B11) Aquatic Invertet Hydrogen Sulfid Oxidized Rhizos Presence of Re Recent Iron Rec	4B) prates (B13) le Odor (C1) spheres along Livir duced Iron (C4) duction in Tilled Sc ssed Plants (D1) (I	ng Roots (C3)	Water-St 4A, an Drainage Dry-Seas Saturatio Geomorp Shallow / FAC-Neu Raised A	ained Leaves (B9) (N d 4B) Patterns (B10) son Water Table (C2) n Visible on Aerial Im ohic Position (D2) Aquitard (D3) utral Test (D5)	agery (C9)
High Water T X Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or 0 Iron Deposits Surface Soil Inundation Vi	eer (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5) Cracks (B6)	- - - - - - - - - - - - - - - - - - -	Water-Stained I 1, 2, 4A, and Salt Crust (B11) Aquatic Invertet Hydrogen Sulfid Oxidized Rhizos Presence of Re Recent Iron Red Stunted or Stres	4B) prates (B13) le Odor (C1) spheres along Livir duced Iron (C4) duction in Tilled Sc ssed Plants (D1) (I	ng Roots (C3)	Water-St 4A, an Drainage Dry-Seas Saturatio Geomorp Shallow / FAC-Neu Raised A	ained Leaves (B9) (N d 4B) Patterns (B10) son Water Table (C2) n Visible on Aerial Im ohic Position (D2) Aquitard (D3) utral Test (D5) nt Mounds (D6) (LRF	agery (C9)
High Water T X Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or 0 Iron Deposits Surface Soil Inundation Vi	er (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5) Cracks (B6) 'isible on Aerial Ima getated Concave Si	- - - - - - - - - - - - - - - - - - -	Water-Stained I 1, 2, 4A, and Salt Crust (B11) Aquatic Invertet Hydrogen Sulfid Oxidized Rhizos Presence of Re Recent Iron Red Stunted or Stres	4B) prates (B13) le Odor (C1) spheres along Livir duced Iron (C4) duction in Tilled Sc ssed Plants (D1) (I	ng Roots (C3)	Water-St 4A, an Drainage Dry-Seas Saturatio Geomorp Shallow / FAC-Neu Raised A	ained Leaves (B9) (N d 4B) Patterns (B10) son Water Table (C2) n Visible on Aerial Im ohic Position (D2) Aquitard (D3) utral Test (D5) nt Mounds (D6) (LRF	agery (C9)
High Water T X Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or d Iron Deposits Surface Soil Inundation Vi Sparsely Veg	er (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5) Cracks (B6) 'isible on Aerial Ima getated Concave So	- - - - - - - - - - - - - - - - - - -	Water-Stained I 1, 2, 4A, and Salt Crust (B11) Aquatic Invertet Hydrogen Sulfid Oxidized Rhizos Presence of Re Recent Iron Rec Stunted or Stres Other (Explain i	4B) prates (B13) de Odor (C1) spheres along Livir duced Iron (C4) duction in Tilled Sc ssed Plants (D1) (I n Remarks)	ng Roots (C3)	Water-St 4A, an Drainage Dry-Seas Saturatio Geomorp Shallow / FAC-Neu Raised A	ained Leaves (B9) (N d 4B) Patterns (B10) son Water Table (C2) n Visible on Aerial Im ohic Position (D2) Aquitard (D3) utral Test (D5) nt Mounds (D6) (LRF	agery (C9)
High Water T X Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or 0 Iron Deposits Surface Soil Inundation Vi Sparsely Veg	er (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5) Cracks (B6) fisible on Aerial Ima getated Concave St ons: Present? Yes	gery (B7) urface (B8)	Water-Stained I 1, 2, 4A, and Salt Crust (B11) Aquatic Invertet Hydrogen Sulfid Oxidized Rhizos Presence of Re Recent Iron Rec Stunted or Stres Other (Explain i	4B) borates (B13) le Odor (C1) spheres along Livir duced Iron (C4) duction in Tilled Sc ssed Plants (D1) (I n Remarks) Depth (inches):	ng Roots (C3) nils (C6) _RR A)	Water-St 4A, an Drainage Dry-Seas Saturatio Geomorp Shallow FAC-Neu Raised A Frost-He	ained Leaves (B9) (N d 4B) Patterns (B10) son Water Table (C2) n Visible on Aerial Im ohic Position (D2) Aquitard (D3) utral Test (D5) utral Test (D5) ave Hummocks (D7)	ILRA 1, 2, agery (C9) R A)
High Water T X Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or 0 Iron Deposits Surface Soil Inundation Vi Sparsely Veg Sield Observation Surface Water P Water Table Pre	er (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5) Cracks (B6) 'isible on Aerial Ima getated Concave Si ons: Present? Yes	gery (B7) urface (B8) X	Water-Stained I 1, 2, 4A, and Salt Crust (B11) Aquatic Invertet Hydrogen Sulfid Oxidized Rhizos Presence of Re Recent Iron Red Stunted or Stres Other (Explain i No	4B) prates (B13) de Odor (C1) spheres along Livir duced Iron (C4) duction in Tilled Sc ssed Plants (D1) (I n Remarks) Depth (inches): Depth (inches):	ng Roots (C3) bils (C6) _RR A) 0.25	Water-St 4A, an Drainage Dry-Seas Saturatio Geomorp Shallow FAC-Neu Raised A Frost-He	ained Leaves (B9) (N d 4B) Patterns (B10) son Water Table (C2) n Visible on Aerial Im ohic Position (D2) Aquitard (D3) utral Test (D5) nt Mounds (D6) (LRF ave Hummocks (D7)	ILRA 1, 2, agery (C9) R A)
High Water T X Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or d Iron Deposits Surface Soil Inundation Vi Sparsely Veg Field Observation	er (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5) Cracks (B6) Tisible on Aerial Ima getated Concave Si ons: Present? Yes esent? Yes	gery (B7) urface (B8)	Water-Stained I 1, 2, 4A, and Salt Crust (B11) Aquatic Invertet Hydrogen Sulfid Oxidized Rhizos Presence of Re Recent Iron Red Stunted or Stres Other (Explain i No	4B) borates (B13) le Odor (C1) spheres along Livir duced Iron (C4) duction in Tilled Sc ssed Plants (D1) (I n Remarks) Depth (inches):	ng Roots (C3) nils (C6) _RR A)	Water-St 4A, an Drainage Dry-Seas Saturatio Geomorp Shallow FAC-Neu Raised A Frost-He	ained Leaves (B9) (N d 4B) Patterns (B10) son Water Table (C2) n Visible on Aerial Im ohic Position (D2) Aquitard (D3) utral Test (D5) utral Test (D5) ave Hummocks (D7)	ILRA 1, 2, agery (C9) R A)
High Water T X Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or (Iron Deposits Surface Soil Inundation Vi Sparsely Veg Field Observation Surface Water P Water Table Pre Saturation Prese (includes capillar	er (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5) Cracks (B6) 'isible on Aerial Ima getated Concave So ons: Present? Yes esent? Yes esent? Yes ent? Yes ry fringe)	gery (B7) urface (B8) X X	Water-Stained I 1, 2, 4A, and Salt Crust (B11) Aquatic Invertet Hydrogen Sulfid Oxidized Rhizos Presence of Re Recent Iron Red Stunted or Stres Other (Explain i No	4B) prates (B13) de Odor (C1) spheres along Livir duced Iron (C4) duction in Tilled Sc ssed Plants (D1) (I n Remarks) Depth (inches): Depth (inches): Depth (inches):	ng Roots (C3) nils (C6) .RR A) 0.25 surface	Water-St 4A, an Drainage Dry-Seas Saturatio Geomorp Shallow FAC-Neu Raised A Frost-He	ained Leaves (B9) (N d 4B) Patterns (B10) son Water Table (C2) n Visible on Aerial Im ohic Position (D2) Aquitard (D3) utral Test (D5) nt Mounds (D6) (LRF ave Hummocks (D7)	ILRA 1, 2, agery (C9) R A)
High Water T X Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or (Iron Deposits Surface Soil Inundation Vi Sparsely Veg Field Observation Surface Water P Water Table Pre Saturation Prese (includes capillar	er (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5) Cracks (B6) 'isible on Aerial Ima getated Concave So ons: Present? Yes esent? Yes esent? Yes ent? Yes ry fringe)	gery (B7) urface (B8) X X	Water-Stained I 1, 2, 4A, and Salt Crust (B11) Aquatic Invertet Hydrogen Sulfid Oxidized Rhizos Presence of Re Recent Iron Rec Stunted or Stres Other (Explain i No No No	4B) prates (B13) de Odor (C1) spheres along Livir duced Iron (C4) duction in Tilled Sc ssed Plants (D1) (I n Remarks) Depth (inches): Depth (inches): Depth (inches):	ng Roots (C3) nils (C6) .RR A) 0.25 surface	Water-St 4A, an Drainage Dry-Seas Saturatio Geomorp Shallow FAC-Neu Raised A Frost-He	ained Leaves (B9) (N d 4B) Patterns (B10) son Water Table (C2) n Visible on Aerial Im ohic Position (D2) Aquitard (D3) utral Test (D5) nt Mounds (D6) (LRF ave Hummocks (D7)	ILRA 1, 2, agery (C9) R A)

Project/Site:	Hop Hill Wetland Delineation		City/County:	Benton Count	у	Sampling Date	: 6/29/2022	
Applicant/Owner:	НОНІ				State: OR	Sampling	Point: S	SP4
Investigator(s):	Jessalynn Spears		Section, T	Fownship, Range	e: T10NR24E			
Landform (hillslope	e, terrace, etc.): hillslope			Local relief ((concave, convex, none):	convex	Slope (%):	15
Subregion (LRR):	B, Columbia/Snake River Plateau	ı L	at: 46.316096	 Long	g: -119.794093	Datum	: NAD 1983	
Soil Map Unit Nar	me: Finley stony fine sandy	/ loam, 0 to 30 p	ercent slopes		NWI	classification:		
Are climatic / hydr	rologic conditions on the site typical			Yes	s X No	(If no, expl	ain in Remar	ks)
Are Vegetation	,Soil, or	Hydrology	significantly d	listurbed? A	re "Normal Circumstand	ces" present?	Yes X N	lo
Are Vegetation	, soil, or	Hydrology	naturally prob	olematic? (li	f needed, explain any a	nswers in Rema	rks.)	
SUMMARY O	F FINDINGS – Attach site	map showi		point locati	ons, transects, in	nportant fea	tures, etc	•
Hydrophytic Vege	etation Present? Yes	1	No <u>X</u>					
Hydric Soil Prese	ent? Yes	1	No <u>X</u>	Is the Sampl				
Wetland Hydrolog	gy Present? Yes	۱	No X	within a Wet	land? Yes	No	X	
Precipitation prior Remarks:	to fieldwork: 0.1 inch in prior t	wo weeks						
VEGETATION	N							
		Absolute	Dominant	Indicator	Dominance Test wo	orksheet:		
Tree Stratum	(Plot size: <u>30' r</u>)	<u>% Cover</u>	Species?	<u>Status</u>	Number of Dominant	Species		
1.					That Are OBL, FACW	V, or FAC:	0 (4	A)
2.								
3.					Total Number of Dom	ninant		
4.					Species Across All S	trata:	2 (B)
		0% = T	otal Cover					
Sapling/Shrub Str	ratum (Plot size: <u>10' r</u>)				Percent of Dominant	Species		
1.					That Are OBL, FACW	V, or FAC:	<u>0%</u> (/	A/B)
2.					Prevalence Index w	orksheet:		
3.					Total % Cover o	of: Multiply by	:	_
4.					OBL species	0 x 1 =	0	
5.					FACW species	0 x 2 =	0	
		0% = T	otal Cover		FAC species	5 x 3 =	15	
<u>Herb Stratum</u>	(Plot size: <u>5' r</u>)				FACU species 3	35 x 4 =	140	
1. Descurainia p	pinnata	60%	Yes	NOL	UPL species 6	30 x 5 =	300	
2. Cynoglossum	n officinale	30%	Yes	FACU	Column Totals: 1	00 (A)	455	(B)
3. Hordeum mu	rinum	5%	No	FAC	Prevalence Inde	x = B/A =	4.55	
4. Chenopodiun	n album	5%	No	FACU	Hydrophytic Vegeta	tion Indicators	:	
5.					1 - Rapid Test fo	r Hydrophytic Ve	egetation	
6.					2 - Dominance T	est is >50%		
7.					3 - Prevalence In	ldex is ≤3.0 ¹		
8.					4 - Morphologica	I Adaptations ¹ (F	Provide suppo	orting
9.					data in Rema	rks or on a sepa	rate sheet)	U
10.					5 - Wetland Non-	Vascular Plants	1	
11.					Problematic Hydr)
		100% = T	otal Cover		¹ Indicators of hydric s			
Woody Vine Strat	tum (Plot size: <u>10' r</u>)				be present.		, <u></u> ,	
1.								
2.					Hydrophytic			
		0% = T	otal Cover		Vegetation	Yes N	• <u>X</u>	
% Bare Ground in	h Herb Stratum 0%	•			Present?			
Remarks:					Entere	d by: KS C	QC by: JS	
Plot adjusted alor	ng wet/upl lines.							

SOIL

Profile Descript				_				
Depth	Mat			Redox Fea				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-7	10YR 3/2	100					SiL	Dry
			·					
								· · · · · · · · · · · · · · · · · · ·
			·					
	ntration D-Denle	tion RM-Red	luced Matrix CS=Cove	ared or Costed Sa	and Grains	² Location: PL	Pore Lining, M=Matri	
			s, unless otherwise i		ind Grains.		or Problematic Hydri	
-							-	C 30115 .
Histosol (A1)			Sandy Redox (S			2 cm Mu	. ,	
Histic Epipeo	()		Stripped Matrix (,			ent Material (TF2)	
Black Histic	(A3)		Loamy Mucky M	ineral (F1) (excep	ot MLRA 1)	Very Sha	llow Dark Surface (TI	F12)
Hydrogen Su	ulfide (A4)		Loamy Gleyed N	latrix (F2)		Other (E	vplain in Remarks)	
Depleted Be	low Dark Surface	(A11)	Depleted Matrix	(F3)		2		
Thick Dark S	Surface (A12)		Redox Dark Surf	face (F6)		³ Indicators of	hydrophytic vegetatio	on and
Sandy Muck	y Mineral (S1)		Depleted Dark S	urface (F7)		wetland hyd	drology must be prese	ent,
Sandy Gleye	ed Matrix (S4)		Redox Depression	ons (F8)		unless dist	urbed or problematic.	
Type: Depth (inches):		<u> </u>				ydric Soil Pres		No X
Depth (inches): Remarks: S Rock refusal @ 7	S = sand; Si = silt; 7.	 C = clay; L =	loam or loamy; co = c	coarse; f = fine; vf		•		
Depth (inches): Remarks: 2 Rock refusal @ 7	S = sand; Si = silt; 7. Y	- C = clay; L =	loam or loamy; co = c	coarse; f = fine; vf		•		
Depth (inches): Remarks: Remarks: Rock refusal @ 7	S = sand; Si = silt; 7. Y ogy Indicators:			coarse; f = fine; vf		= heavy (more	clay); - = light (less cl	ay)
Depth (inches): Remarks: 2 Rock refusal @ 7 HYDROLOG Wetland Hydrolo Primary Indicator	S = sand; Si = silt; 7. Y ogy Indicators: rs (minimum of on		eck all that apply)		= very fine; +	= heavy (more	clay); - = light (less cl	ay)
Depth (inches): Remarks: 3 Rock refusal @ 7 HYDROLOG Wetland Hydrold Primary Indicator Surface Wat	S = sand; Si = silt; 7. Y ogy Indicators: rs (minimum of on ter (A1)		eck all that apply) Water-Stained L	eaves (B9) (exce	= very fine; +	= heavy (more <u>Secondary In</u> Water-St	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (M	ay)
Depth (inches): Remarks: 97 Rock refusal @ 7 HYDROLOG Wetland Hydrold Primary Indicator Surface Wat High Water 1	S = sand; Si = silt 7. Y ogy Indicators: rs (minimum of on ter (A1) Table (A2)		eck all that apply) Water-Stained L 1, 2, 4A, and 4	eaves (B9) (exce	= very fine; +	= heavy (more <u>Secondary In</u> Water-St 4A, an	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (M d 4B)	ay)
Depth (inches): Remarks: 2 Rock refusal @ 7 HYDROLOG Wetland Hydrold Primary Indicator Surface Wate High Water 7 Saturation (A	S = sand; Si = silt 7. Y ogy Indicators: rs (minimum of on ter (A1) Table (A2) A3)		eck all that apply) Water-Stained L	eaves (B9) (exce	= very fine; +	= heavy (more <u>Secondary In</u> Water-St Drainage	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (M d 4B) Patterns (B10)	ay)
Depth (inches): Remarks: 97 Rock refusal @ 7 HYDROLOG Wetland Hydrold Primary Indicator Surface Wat High Water 1	S = sand; Si = silt 7. Y ogy Indicators: rs (minimum of on ter (A1) Table (A2) A3)		eck all that apply) Water-Stained L 1, 2, 4A, and 4	eaves (B9) (exce 4B)	= very fine; +	= heavy (more <u>Secondary In</u> Water-St 4A, an Drainage Dry-Seas	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (M d 4B) Patterns (B10) con Water Table (C2)	ay) equired) ILRA 1, 2,
Depth (inches): Remarks: 2 Rock refusal @ 7 HYDROLOG Wetland Hydrold Primary Indicator Surface Wate High Water 7 Saturation (A	S = sand; Si = silt; 7. Y ogy Indicators: rs (minimum of on ter (A1) Table (A2) A3) s (B1)		eck all that apply) Water-Stained L 1, 2, 4A, and 4 Salt Crust (B11)	eaves (B9) (exce 4B) rates (B13)	= very fine; +	= heavy (more <u>Secondary In</u> Water-St 4A, an Drainage Dry-Seas	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (M d 4B) Patterns (B10)	ay) equired) ILRA 1, 2,
Depth (inches): Remarks: 2 Rock refusal @ 7 HYDROLOG Wetland Hydrold Primary Indicator Surface Wate High Water T Saturation (A Water Marks	S = sand; Si = silt 7. Y ogy Indicators: rs (minimum of on ter (A1) Table (A2) A3) s (B1) eposits (B2)		eck all that apply) Water-Stained L 1, 2, 4A, and Salt Crust (B11) Aquatic Inverteb Hydrogen Sulfide	eaves (B9) (exce 4B) rates (B13)	= very fine; +	= heavy (more <u>Secondary In</u> Water-St 4A, an Drainage Dry-Seas Saturatio	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (M d 4B) Patterns (B10) con Water Table (C2)	ay) equired) ILRA 1, 2,
Depth (inches): Remarks: 7 Rock refusal @ 7 HYDROLOG Wetland Hydrold Primary Indicator Surface Wate High Water 7 Saturation (A Water Marks Sediment De	S = sand; Si = silt; 7. Y ogy Indicators: rs (minimum of on ter (A1) Table (A2) A3) s (B1) eposits (B2) is (B3)		eck all that apply) Water-Stained L 1, 2, 4A, and Salt Crust (B11) Aquatic Inverteb Hydrogen Sulfide	eaves (B9) (exce 4B) rates (B13) e Odor (C1) pheres along Livir	= very fine; +	= heavy (more <u>Secondary In</u> Water-St 4A, an Drainage Dry-Seas Saturatio Geomorp	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (M d 4B) Patterns (B10) son Water Table (C2) n Visible on Aerial Im	ay) equired) ILRA 1, 2,
Depth (inches): Remarks: 2 Rock refusal @ 7 HYDROLOG Wetland Hydrold Primary Indicator Surface Water High Water T Saturation (A Water Marks Sediment De Drift Depositi	S = sand; Si = silt; 7. Y ogy Indicators: rs (minimum of on ter (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4)		eck all that apply) Water-Stained L 1, 2, 4A, and Salt Crust (B11) Aquatic Inverteb Hydrogen Sulfide Oxidized Rhizos Presence of Red	eaves (B9) (exce 4B) rates (B13) e Odor (C1) pheres along Livir	= very fine; + pt MLRA ng Roots (C3)	= heavy (more <u>Secondary In</u> Water-St 4A, an Drainage Dry-Seas Saturatio Geomorp Shallow /	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (M d 4B) Patterns (B10) son Water Table (C2) n Visible on Aerial Im whic Position (D2)	ay) equired) ILRA 1, 2,
Depth (inches): Remarks: 2 Rock refusal @ 7 HYDROLOG Wetland Hydrold Primary Indicator Surface Wate High Water Tarks Saturation (A Water Marks Sediment De Drift Deposit: Algal Mat or	S = sand; Si = silt 7. Y ogy Indicators: rs (minimum of on ter (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5)		eck all that apply) Water-Stained L 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosj Presence of Red Recent Iron Red	eaves (B9) (exce 4B) rates (B13) e Odor (C1) pheres along Livir luced Iron (C4)	= very fine; + pt MLRA ng Roots (C3) iils (C6)	= heavy (more <u>Secondary In</u> Water-St 4A, an Drainage Dry-Seas Saturatio Geomorp Shallow / FAC-Neu	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (M d 4B) Patterns (B10) son Water Table (C2) n Visible on Aerial Im phic Position (D2) Aquitard (D3)	ay) equired) ILRA 1, 2, agery (C9)
Depth (inches): Remarks: Rock refusal @ 7 HYDROLOG Wetland Hydrold Primary Indicator Surface Wate High Water T Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or Iron Deposits Surface Soil	S = sand; Si = silt 7. Y ogy Indicators: rs (minimum of on ter (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5)	e required; ch	eck all that apply) Water-Stained L 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosj Presence of Red Recent Iron Red	eaves (B9) (exce 4B) e Odor (C1) pheres along Livir luced Iron (C4) uction in Tilled So sed Plants (D1) (I	= very fine; + pt MLRA ng Roots (C3) iils (C6)	= heavy (more <u>Secondary In</u> Water-St 4A , an Drainage Dry-Seas Saturatio Geomorp Shallow / FAC-Neu Raised A	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (M d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im whic Position (D2) Aquitard (D3) ttral Test (D5)	ay) equired) ILRA 1, 2, agery (C9)
Depth (inches): Remarks: 2 Rock refusal @ 7 HYDROLOG Metland Hydrold Primary Indicator Surface Wate High Water T Saturation (A Water Marks Sediment De Drift Deposite Algal Mat or Iron Deposite Surface Soil Inundation V	S = sand; Si = silt; 7. Y ogy Indicators: rs (minimum of on ter (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5) Cracks (B6)	e required; ch	eck all that apply) Water-Stained L 1, 2, 4A, and Salt Crust (B11) Aquatic Inverteb Hydrogen Sulfide Oxidized Rhizos Presence of Red Recent Iron Red Stunted or Stress	eaves (B9) (exce 4B) e Odor (C1) pheres along Livir luced Iron (C4) uction in Tilled So sed Plants (D1) (I	= very fine; + pt MLRA ng Roots (C3) iils (C6)	= heavy (more <u>Secondary In</u> Water-St 4A , an Drainage Dry-Seas Saturatio Geomorp Shallow / FAC-Neu Raised A	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (M d 4B) Patterns (B10) con Water Table (C2) n Visible on Aerial Im ohic Position (D2) Aquitard (D3) ttral Test (D5) nt Mounds (D6) (LRF	ay) equired) ILRA 1, 2, agery (C9)
Depth (inches): Remarks: 2 Rock refusal @ 7 HYDROLOG Wetland Hydrold Primary Indicator Surface Wate High Water T Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or Iron Deposits Surface Soil Inundation V	S = sand; Si = silt 7. Y ogy Indicators: rs (minimum of on ter (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5) Cracks (B6) 'isible on Aerial Im getated Concave S	e required; ch	eck all that apply) Water-Stained L 1, 2, 4A, and Salt Crust (B11) Aquatic Inverteb Hydrogen Sulfide Oxidized Rhizos Presence of Red Recent Iron Red Stunted or Stress	eaves (B9) (exce 4B) e Odor (C1) pheres along Livir luced Iron (C4) uction in Tilled So sed Plants (D1) (I	= very fine; + pt MLRA ng Roots (C3) iils (C6)	= heavy (more <u>Secondary In</u> Water-St 4A , an Drainage Dry-Seas Saturatio Geomorp Shallow / FAC-Neu Raised A	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (M d 4B) Patterns (B10) con Water Table (C2) n Visible on Aerial Im ohic Position (D2) Aquitard (D3) ttral Test (D5) nt Mounds (D6) (LRF	ay) equired) ILRA 1, 2, agery (C9)
Depth (inches): Remarks: 2 Rock refusal @ 7 HYDROLOG Metland Hydrold Primary Indicator Surface Wate High Water Ta Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or Iron Deposits Surface Soil Inundation V Sparsely Veg	S = sand; Si = silt; 7. Y ogy Indicators: rs (minimum of on ter (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5) Cracks (B6) /isible on Aerial Im getated Concave S ons:	e required; ch agery (B7) Surface (B8)	eck all that apply) Water-Stained Li 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebi Hydrogen Sulfide Oxidized Rhizosj Presence of Red Recent Iron Red Stunted or Stress Other (Explain in	eaves (B9) (exce 4B) rates (B13) e Odor (C1) pheres along Livir luced Iron (C4) uction in Tilled So sed Plants (D1) (I a Remarks)	= very fine; + pt MLRA ng Roots (C3) iils (C6)	= heavy (more <u>Secondary In</u> Water-St 4A , an Drainage Dry-Seas Saturatio Geomorp Shallow / FAC-Neu Raised A	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (M d 4B) Patterns (B10) con Water Table (C2) n Visible on Aerial Im ohic Position (D2) Aquitard (D3) ttral Test (D5) nt Mounds (D6) (LRF	ay) equired) ILRA 1, 2, agery (C9)
Depth (inches): Remarks: 7 Rock refusal @ 7 HYDROLOG Wetland Hydrold Primary Indicator Surface Water High Water Tarks Sediment De Drift Deposite Algal Mat or Iron Deposite Surface Soil Inundation V Sparsely Veg Field Observatio Surface Water P	S = sand; Si = silt 7. Y ogy Indicators: rs (minimum of on ter (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5) Cracks (B6) 'isible on Aerial Im getated Concave 3 ons: Present? Yes	<u>e required; ch</u> agery (B7) Surface (B8)	eck all that apply) Water-Stained Li 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizos Presence of Red Recent Iron Red Stunted or Stress Other (Explain in No X	eaves (B9) (exce 4B) rates (B13) e Odor (C1) pheres along Livir luced Iron (C4) uction in Tilled So sed Plants (D1) (I n Remarks) Depth (inches):	= very fine; + pt MLRA ng Roots (C3) iils (C6)	= heavy (more <u>Secondary In</u> Water-St 4A , an Drainage Dry-Seas Saturatio Geomorp Shallow / FAC-Neu Raised A Frost-He	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (M d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im whic Position (D2) Aquitard (D3) ttral Test (D5) nt Mounds (D6) (LRF ave Hummocks (D7)	ay) equired) ILRA 1, 2, agery (C9)
Depth (inches): Remarks: 2 Rock refusal @ 7 HYDROLOG Wetland Hydrold Primary Indicator Surface Water High Water Ta Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or Iron Deposits Surface Soil Inundation V Sparsely Veg Field Observatio Surface Water P Water Table Pre	S = sand; Si = silt; 7. Y ogy Indicators: rs (minimum of on ter (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5) Cracks (B6) /isible on Aerial Im getated Concave 3 ons: Present? Yes	e required; ch agery (B7) Surface (B8)	eck all that apply) Water-Stained Li 1, 2, 4A, and Salt Crust (B11) Aquatic Inverteb Hydrogen Sulfide Oxidized Rhizosy Presence of Red Recent Iron Red Stunted or Stress Other (Explain in No X E No X E	eaves (B9) (exce 4B) rates (B13) e Odor (C1) pheres along Livir luced Iron (C4) uction in Tilled So sed Plants (D1) (I n Remarks) Depth (inches):	= very fine; + pt MLRA ng Roots (C3) iils (C6)	= heavy (more <u>Secondary In</u> Water-St 4A , an Drainage Dry-Seas Saturatio Geomorp Shallow / FAC-Neu Raised A Frost-He	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (M d 4B) Patterns (B10) con Water Table (C2) n Visible on Aerial Im ohic Position (D2) Aquitard (D3) ttral Test (D5) nt Mounds (D6) (LRF ave Hummocks (D7)	ay) equired) ILRA 1, 2, agery (C9) R A)
Depth (inches): Remarks: 2 Rock refusal @ 7 HYDROLOG Wetland Hydrold Primary Indicator Surface Water High Water Ta Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or Iron Deposits Surface Soil Inundation V Sparsely Veg Field Observatio Surface Water P Water Table Pre Saturation Prese	S = sand; Si = silt; 7. Y ogy Indicators: rs (minimum of on ter (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5) Cracks (B6) /isible on Aerial Im getated Concave S ons: Present? Yes ent? Yes	e required; ch agery (B7) Surface (B8)	eck all that apply) Water-Stained Li 1, 2, 4A, and Salt Crust (B11) Aquatic Inverteb Hydrogen Sulfide Oxidized Rhizosy Presence of Red Recent Iron Red Stunted or Stress Other (Explain in No X E No X E	eaves (B9) (exce 4B) rates (B13) e Odor (C1) pheres along Livir luced Iron (C4) uction in Tilled So sed Plants (D1) (I n Remarks) Depth (inches):	= very fine; + pt MLRA ng Roots (C3) iils (C6)	= heavy (more <u>Secondary In</u> Water-St 4A , an Drainage Dry-Seas Saturatio Geomorp Shallow / FAC-Neu Raised A Frost-He	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (M d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im whic Position (D2) Aquitard (D3) ttral Test (D5) nt Mounds (D6) (LRF ave Hummocks (D7)	ay) equired) ILRA 1, 2, agery (C9)
Depth (inches): Remarks: 7 Rock refusal @ 7 HYDROLOG Metland Hydrold Primary Indicator Surface Water High Water Ta Saturation (A Water Marks Sediment De Drift Deposits Algal Mat or Iron Deposits Surface Soil Inundation V Sparsely Veg Field Observatio Surface Water Pre Saturation Prese (includes capillar	S = sand; Si = silt 7. Y ogy Indicators: rs (minimum of on ter (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5) Cracks (B6) 'isible on Aerial Im getated Concave S ons: Present? Yes esent? Yes ent? Yes	e required; ch agery (B7) Surface (B8)	eck all that apply) Water-Stained Li 1, 2, 4A, and Salt Crust (B11) Aquatic Invertebi Hydrogen Sulfide Oxidized Rhizosy Presence of Red Recent Iron Red Stunted or Stress Other (Explain in No X [No X [No X [eaves (B9) (exce 4B) rates (B13) e Odor (C1) pheres along Livir luced Iron (C4) uction in Tilled So sed Plants (D1) (I a Remarks) Depth (inches): Depth (inches):	= very fine; +	= heavy (more <u>Secondary In</u> Water-St 4A, an Drainage Dry-Seas Saturatio Geomorp Shallow / FAC-Neu Raised A Frost-He Wetland	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (M d 4B) Patterns (B10) con Water Table (C2) n Visible on Aerial Im ohic Position (D2) Aquitard (D3) ttral Test (D5) nt Mounds (D6) (LRF ave Hummocks (D7)	ay) equired) ILRA 1, 2, agery (C9) R A)
Depth (inches): Remarks: 7 Rock refusal @ 7 HYDROLOG Metland Hydrold Primary Indicator Surface Water High Water Ta Saturation (A Water Marks Sediment De Drift Deposits Surface Soil Inon Deposits Surface Soil Inundation V Sparsely Veg Field Observatio Surface Water Prese Saturation Prese (includes capillar)	S = sand; Si = silt 7. Y ogy Indicators: rs (minimum of on ter (A1) Table (A2) A3) s (B1) eposits (B2) s (B3) Crust (B4) s (B5) Cracks (B6) 'isible on Aerial Im getated Concave S ons: Present? Yes esent? Yes ent? Yes	e required; ch agery (B7) Surface (B8)	eck all that apply) Water-Stained Li 1, 2, 4A, and Salt Crust (B11) Aquatic Inverteb Hydrogen Sulfide Oxidized Rhizosy Presence of Red Recent Iron Red Stunted or Stress Other (Explain in No X E No X E	eaves (B9) (exce 4B) rates (B13) e Odor (C1) pheres along Livir luced Iron (C4) uction in Tilled So sed Plants (D1) (I a Remarks) Depth (inches): Depth (inches):	= very fine; +	= heavy (more <u>Secondary In</u> Water-St 4A, an Drainage Dry-Seas Saturatio Geomorp Shallow / FAC-Neu Raised A Frost-He Wetland	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (M d 4B) Patterns (B10) con Water Table (C2) n Visible on Aerial Im ohic Position (D2) Aquitard (D3) ttral Test (D5) nt Mounds (D6) (LRF ave Hummocks (D7)	ay) equired) ILRA 1, 2, agery (C9) R A)

Project/Site: Hop Hill Wetland Delineation		City/County:	Benton Count	ty	Sampling Date: 6/29/2022
Applicant/Owner: HOHI				State: OR	Sampling Point: SP11
Investigator(s): Jessalynn Spears		Section, T	Fownship, Rang	e: T10NR24E	
Landform (hillslope, terrace, etc.): depression			Local relief	(concave, convex, none):	concave Slope (%): 1
Subregion (LRR): B, Columbia/Snake River Plate	eau	Lat: <u>46.314921</u>	Lon	ıg: <u>-119.794255</u>	Datum: NAD 1983
Soil Map Unit Name: Finley stony fine sa	ndy loam, 0 to 3	30 percent slopes		NWI	classification:
Are climatic / hydrologic conditions on the site typi	cal for this time	of year?	Ye		(If no, explain in Remarks)
	, or Hydrology	significantly d		Are "Normal Circumstand	· · · · · · · · · · · · · · · · · · ·
	, or Hydrology	naturally prob		If needed, explain any a	,
SUMMARY OF FINDINGS – Attach si			point locat	ions, transects, in	nportant features, etc.
, , , , , , , , , , , , , , , , , , , ,	res X res X	No	Is the Samp	led Area	
,		No	within a Wet		V Na
Wetland Hydrology Present? Y Precipitation prior to fieldwork: 0.1 inch in prior		No	Within a rea	tiand? Yes	XNo
Remarks: Pipe fed wetland after 3 10' diameter water trough		ce.			
VEGETATION					
	Absolute	Dominant	Indicator	Dominance Test wo	
<u>Tree Stratum</u> (Plot size: <u>30' r</u>)	<u>% Cover</u>	Species?	<u>Status</u>	Number of Dominant	•
1				That Are OBL, FACV	V, or FAC: 2 (A)
2					
4.				Total Number of Dom	
4. 				Species Across All S	trata: <u>2</u> (B)
Septime/Shruh Stratum (Diat size: 10'r) 0%	= Total Cover			~ .
<u>Sapling/Shrub Stratum</u> (Plot size: <u>10' r</u> 1.)			Percent of Dominant	
2.				That Are OBL, FACV	
3.				Prevalence Index w Total % Cover of	
4					$\frac{80}{20} \times 1 = \frac{80}{10}$
5				· · · · · · · · · · · · · · · · · · ·	$x_{20} = 40$
Herb Stratum (Plot size: <u>5' r</u>)	0%	= Total Cover		· · · ·	$\begin{array}{c} 0 \\ 0 \\ x \\ 4 \\ \end{array} = \begin{array}{c} 0 \\ 0 \\ 0 \\ \end{array}$
	000/	No.		· · · · · · · · · · · · · · · · · · ·	
Veronica americana Persicaria maculosa	80%	Yes	OBL		$0 \times 5 = 0$
 <u>Persicaria maculosa</u> 3. 	20%	Yes	FACW	Prevalence Inde	$\begin{array}{ccc} 00 & (A) & 120 & (B) \\ ex = B/A = & 1.20 \end{array}$
4.				Hydrophytic Vegeta	
4 5					r Hydrophytic Vegetation
6.				X 2 - Dominance T	
7.				3 - Prevalence In	
8.					Idex is s3.0 I Adaptations ¹ (Provide supporting
9.				· · · ·	rks or on a separate sheet)
10.				5 - Wetland Non-	. ,
11.					rophytic Vegetation ¹ (Explain)
····	10.0%				soil and wetland hydrology must
Woody Vine Stratum (Plot size: <u>10' r</u>		= Total Cover		be present.	soll and welland hydrology must
1.				bo press	
2.		·		Hydrophytic	
	0%	= Total Cover		Vegetation	Yes X No
% Bare Ground in Herb Stratum 0%				Present?	
Remarks:				Entere	d by: KS QC by: JS

Depth	cribe to the denth				ampling Point: SP11
Depth		needed to document the ind	cator or confirm the a	bsence of indicators.)	
·	Matrix	R	edox Features		
(inches) Color (m	noist) %	Color (moist) %	5 Type ¹	Loc ² Te	exture Remarks
0-2 10YR	2/2 100			SiL	
		educed Matrix CS=Covered or C	Coated Sand Grains.	² Location: PL=Pore Linin	- -
lydric Soil Indicators: (Ap	plicable to all LR	Rs, unless otherwise noted.)		Indicators for Problem	atic Hydric Soils ³ :
Histosol (A1)		Sandy Redox (S5)		2 cm Muck (A10)	
Histic Epipedon (A2)		Stripped Matrix (S6)		Red Parent Materia	(TF2)
Black Histic (A3)		Loamy Mucky Mineral (F	1) (except MLRA 1)	Very Shallow Dark S	Surface (TF12)
Hydrogen Sulfide (A4)		Loamy Gleyed Matrix (F2	<u>?)</u>	X Other (Explain in Re	emarks)
Depleted Below Dark S	urface (A11)	Depleted Matrix (F3)		0	
Thick Dark Surface (A1	2)	Redox Dark Surface (F6)	³ Indicators of hydrophyti	c vegetation and
Sandy Mucky Mineral (31)	Depleted Dark Surface (-7)	wetland hydrology mu	st be present,
Sandy Gleyed Matrix (S	54)	Redox Depressions (F8)		unless disturbed or pr	oblematic.
Restrictive Layer (if prese	nt):				
Туре:					
Depth (inches):			Hy	ydric Soil Present? Ye	es X No
substrate and similarity to W HYDROLOGY Wetland Hydrology Indica					
Primary Indicators (minimur	n of one required; o	heck all that apply)		Secondary Indicators (2	or more required)
Surface Water (A1)		Water-Stained Leaves (E	39) (except MLRA	Water-Stained Leav	res (B9) (MLRA 1, 2 ,
X High Water Table (A2)		1, 2, 4A, and 4B)		4A, and 4B)	
X Saturation (A3)		Salt Crust (B11)		Drainage Patterns (B10)
Water Marks (B1)		Aquatic Invertebrates (B	13)	Dry-Season Water	
Sediment Deposits (B2)	Hydrogen Sulfide Odor (,	Saturation Visible o	
Drift Deposits (B3)	,	Oxidized Rhizospheres a	,	Geomorphic Positio	
		·			
Algal Mat or Crust (B4)		Presence of Reduced Irc	e e ()	·	n (D2)
Algal Mat or Crust (B4) Iron Deposits (B5)		Presence of Reduced Irc Recent Iron Reduction in	on (C4)	Shallow Aquitard (D FAC-Neutral Test (I	n (D2) 3)
Iron Deposits (B5)	3)	Recent Iron Reduction in	on (C4) Tilled Soils (C6)	Shallow Aquitard (D FAC-Neutral Test (I	n (D2) 3) D5)
Iron Deposits (B5) Surface Soil Cracks (B6	,	Recent Iron Reduction in Stunted or Stressed Plar	on (C4) I Tilled Soils (C6) Ints (D1) (LRR A)	Shallow Aquitard (D	n (D2) 3) 05) (D6) (LRR A)
Iron Deposits (B5)	erial Imagery (B7)	Recent Iron Reduction in Stunted or Stressed Plar Other (Explain in Remar	on (C4) I Tilled Soils (C6) Ints (D1) (LRR A)	Shallow Aquitard (D FAC-Neutral Test (I Raised Ant Mounds	n (D2) 3) 05) (D6) (LRR A)
Iron Deposits (B5) Surface Soil Cracks (B6 Inundation Visible on A	erial Imagery (B7)	Recent Iron Reduction in Stunted or Stressed Plar Other (Explain in Remar	on (C4) I Tilled Soils (C6) Ints (D1) (LRR A)	Shallow Aquitard (D FAC-Neutral Test (I Raised Ant Mounds	n (D2) 3) 05) (D6) (LRR A)
Iron Deposits (B5) Surface Soil Cracks (B6 Inundation Visible on A Sparsely Vegetated Co Field Observations:	erial Imagery (B7) ncave Surface (B8)	Recent Iron Reduction in Stunted or Stressed Plar Other (Explain in Remark	on (C4) n Tilled Soils (C6) nts (D1) (LRR A) ks)	Shallow Aquitard (D FAC-Neutral Test (I Raised Ant Mounds	n (D2) 3) 05) (D6) (LRR A)
Iron Deposits (B5) Surface Soil Cracks (B6 Inundation Visible on A Sparsely Vegetated Co Field Observations: Surface Water Present?	erial Imagery (B7) ncave Surface (B8) Yes <u>X</u>	Recent Iron Reduction in Stunted or Stressed Plar Other (Explain in Remark	on (C4) n Tilled Soils (C6) nts (D1) (LRR A) ks)	Shallow Aquitard (D FAC-Neutral Test (I Raised Ant Mounds Frost-Heave Humm	n (D2) 3) 05) (D6) (LRR A) ocks (D7)
Iron Deposits (B5) Surface Soil Cracks (B6 Inundation Visible on A Sparsely Vegetated Co Field Observations: Surface Water Present? Water Table Present?	erial Imagery (B7) ncave Surface (B8) Yes X Yes X	Recent Iron Reduction in Stunted or Stressed Plar Other (Explain in Remark No Depth (ir No Depth (ir	aches): <u>1-Jan</u>	Shallow Aquitard (D FAC-Neutral Test (I Raised Ant Mounds Frost-Heave Humm	n (D2) 3) 05) (D6) (LRR A) ocks (D7) y Present?
Iron Deposits (B5) Surface Soil Cracks (B6 Inundation Visible on A Sparsely Vegetated Co Field Observations: Surface Water Present?	erial Imagery (B7) ncave Surface (B8) Yes <u>X</u>	Recent Iron Reduction in Stunted or Stressed Plar Other (Explain in Remark	n (C4) n Tilled Soils (C6) nts (D1) (LRR A) ks) nches): <u>1-Jan</u> nches): <u>Surface</u>	Shallow Aquitard (D FAC-Neutral Test (I Raised Ant Mounds Frost-Heave Humm	n (D2) 3) 05) (D6) (LRR A) ocks (D7) / Present?
Iron Deposits (B5) Surface Soil Cracks (B6 Inundation Visible on Ar Sparsely Vegetated Co Field Observations: Surface Water Present? Water Table Present? Saturation Present? (includes capillary fringe)	rial Imagery (B7) ncave Surface (B8) Yes X Yes X Yes X	Recent Iron Reduction in Stunted or Stressed Plar Other (Explain in Remark No Depth (ir No Depth (ir	n (C4) a Tilled Soils (C6) hts (D1) (LRR A) ks) hts hts hts <u>1-Jan</u> hts <u>Surface</u> hts <u>Surface</u>	Shallow Aquitard (D FAC-Neutral Test (I Raised Ant Mounds Frost-Heave Humm Wetland Hydrolog	n (D2) 3) 05) (D6) (LRR A) ocks (D7) y Present?
Iron Deposits (B5) Surface Soil Cracks (B6 Inundation Visible on Ar Sparsely Vegetated Co Field Observations: Surface Water Present? Water Table Present? Saturation Present? (includes capillary fringe)	rial Imagery (B7) ncave Surface (B8) Yes X Yes X Yes X	Recent Iron Reduction in Stunted or Stressed Plar Other (Explain in Remark No Depth (ir No Depth (ir No Depth (ir	n (C4) a Tilled Soils (C6) hts (D1) (LRR A) ks) hts hts hts <u>1-Jan</u> hts <u>Surface</u> hts <u>Surface</u>	Shallow Aquitard (D FAC-Neutral Test (I Raised Ant Mounds Frost-Heave Humm Wetland Hydrolog	n (D2) 3) 05) (D6) (LRR A) ocks (D7) / Present? os X No

Project/Site: Hop Hill Wetland Delineation		City/County:	Benton Count	ty	Sampling Date:	6/29/2022	
Applicant/Owner: HOHI				State: OR	Sampling	Point: SF	P12
Investigator(s): Jessalynn Spears		Section, 7	rownship, Rang	e: T10NR24E			
Landform (hillslope, terrace, etc.): depression			Local relief	(concave, convex, none):	concave	Slope (%):	10
Subregion (LRR): B, Columbia/Snake River Platea	u	Lat: 46.314912	Lon	g: -119.794231	Datum:	NAD 1983	
Soil Map Unit Name: Finley stony fine sand	ly loam, 0 to 30	percent slopes		NWI	classification:		
Are climatic / hydrologic conditions on the site typica	al for this time of	f year?	Ye	s <u>No</u>	(If no, expla	ain in Remark	<s)< td=""></s)<>
	r Hydrology			re "Normal Circumstand	•	Yes X No	0
	r Hydrology	naturally prob		lf needed, explain any ai			
SUMMARY OF FINDINGS – Attach site			point locat	ions, transects, in	nportant feat	ures, etc.	
Hydrophytic Vegetation Present? Yes		No X	Is the Samp	led Area			
Hydric Soil Present? Yes		No X	within a Wet	land?		v	
Wetland Hydrology Present? Yes		No X		nand? Yes	No	<u>X</u>	
Precipitation prior to fieldwork: 0.1 inch in prior Remarks:	two weeks						
VEGETATION				-			
	Absolute	Dominant	Indicator	Dominance Test wo	orksheet:		
<u>Tree Stratum</u> (Plot size: <u>30' r</u>)	<u>% Cover</u>	Species?	<u>Status</u>	Number of Dominant	Species		
1. 2.				That Are OBL, FACW	V, or FAC:	(A	۹)
3.				Total Number of Dom	ainant		
4.				Species Across All Si		2 (B	3)
	0% =	Total Cover				(D	')
<u>Sapling/Shrub Stratum</u> (Plot size: <u>10' r</u>)	0,0			Percent of Dominant	Species		
1.				That Are OBL, FACW	•	<u>50%</u> (A	4/B)
2.				Prevalence Index w		()	(0)
3.				Total % Cover o			
4.				OBL species	0 x 1 =	0	
5.					0 x 2 =	0	-
	0% =	Total Cover		FAC species 2	25 x 3 =	75	—
<u>Herb Stratum</u> (Plot size: <u>5' r</u>)					50 x 4 =	200	—
1. Sisymbrium altissimum	50%	Yes	FACU		0 x 5 =	0	-
2. Hordeum murinum	20%	Yes	FAC	Column Totals: 7	75 (A)	275	(B)
3. Leymus cinereus	5%	No	FAC	Prevalence Inde	x = B/A =	3.67	_
4.				Hydrophytic Vegeta	tion Indicators:		
5.				1 - Rapid Test for	r Hydrophytic Ve	getation	
6.				2 - Dominance T	est is >50%		
7.				3 - Prevalence In	ldex is ≤3.0 ¹		
8.				4 - Morphologica	I Adaptations ¹ (P	rovide suppo	orting
9.				data in Rema	rks or on a separ	ate sheet)	-
10.				5 - Wetland Non-	Vascular Plants ¹	Į	
11.				Problematic Hydr	rophytic Vegetati	on ¹ (Explain)	
Woody Vine Stratum (Plot size: <u>10' r</u>)	75% =	Total Cover		¹ Indicators of hydric s be present.	soil and wetland l	וydrology mu	st
1.							
2		T 1 10		Hydrophytic	Voc No	v	
% Bare Ground in Herb Stratum25%	=	Total Cover		Vegetation Present?	Yes No	• <u>X</u>	
Remarks:	_			Entere	d by: KS Q	C by: JS	
Bare ground is soil and boulders.					- <u> </u>		-

SOIL Brofile D

Denth	N	Matrix		Redox Featu	Irec			
Depth (inchos)			Color (maint)		Type ¹	Loc ²	Touture	Domarka
(inches)	Color (moist	/	Color (moist)	<u>%</u>	туре	LOC	Texture	Remarks
0-4	10YR 3/2	100		<u> </u>			SiL	Dry
		_						
		_						
		•	educed Matrix CS=Cove		d Grains.		Pore Lining, M=Matr	
Hydric Soil Indi	icators: (Applie	cable to all LR	Rs, unless otherwise r	noted.)		Indicators fo	r Problematic Hydr	ic Soils ³ :
Histosol (A1	1)		Sandy Redox (St	5)		2 cm Muo	ck (A10)	
Histic Epipe	edon (A2)		Stripped Matrix (S6)		Red Pare	nt Material (TF2)	
Black Histic	c (A3)		Loamy Mucky Mi	neral (F1) (except	MLRA 1)	Very Sha	llow Dark Surface (T	F12)
Hydrogen S	Sulfide (A4)		Loamy Gleyed M	latrix (F2)		Other (Ex	plain in Remarks)	
Depleted Be	elow Dark Surfa	ce (A11)	Depleted Matrix ((F3)				
Thick Dark	Surface (A12)		Redox Dark Surfa	ace (F6)		³ Indicators of	hydrophytic vegetati	on and
Sandy Muck	ky Mineral (S1)		Depleted Dark St	urface (F7)		wetland hyd	Irology must be pres	ent,
Sandy Gley	ved Matrix (S4)		Redox Depressio	ons (F8)		unless distu	rbed or problematic.	
	ver (if present):							
Type:								
Type.								
Depth (inches)	S = sand; Si =	silt; C = clay; L	= loam or loamy; co = c	oarse; f = fine; vf =		ydric Soil Pres = heavy (more o		No X lay)
Depth (inches) Remarks: Rock refusal @ HYDROLOG	S = sand; Si = 4".		= loam or loamy; co = c	oarse; f = fine; vf =		-		
Depth (inches) Remarks: Rock refusal @ HYDROLOG Wetland Hydrol	S = sand; Si = 4". GY llogy Indicators		= loam or loamy; co = c	coarse; f = fine; vf =		= heavy (more o		lay)
Depth (inches) Remarks: Rock refusal @ HYDROLOG Wetland Hydrol Primary Indicato	S = sand; Si = 4". SY logy Indicators		check all that apply)		very fine; +	= heavy (more of a secondary In	clay); - = light (less cl	lay) equired)
Depth (inches) Remarks: Rock refusal @ HYDROLOG Wetland Hydrol Primary Indicato Surface Wa	S = sand; Si = 4". SY ology Indicators prs (minimum of ater (A1)		theck all that apply)	eaves (B9) (except	very fine; +	= heavy (more of <u>Secondary In</u> Water-Sta	clay); - = light (less cl dicators (2 or more n ained Leaves (B9) (N	lay) equired)
Depth (inches) Remarks: Rock refusal @ HYDROLOG Wetland Hydrol Primary Indicato Surface Wa High Water	S = sand; Si = 4". Constant of the second se		<u>check all that apply)</u> Water-Stained Le 1, 2, 4A, and 4	eaves (B9) (except	very fine; +	= heavy (more o <u>Secondary In</u> Water-Sta 4A, an	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (N d 4B)	lay) equired)
Depth (inches) Remarks: Rock refusal @ HYDROLOG Wetland Hydro Primary Indicato Surface Wa High Water Saturation (S = sand; Si = 4". SY logy Indicators prs (minimum of ater (A1) Table (A2) (A3)		check all that apply) Water-Stained Le 1, 2, 4A, and 4 Salt Crust (B11)	eaves (B9) (except 4B)	very fine; +	= heavy (more of <u>Secondary In</u> Water-Sta Drainage	clay); - = light (less cl dicators (2 or more r ained Leaves (B9) (N d 4B) Patterns (B10)	lay) equired) ILRA 1, 2,
Depth (inches) Remarks: Rock refusal @ HYDROLOG Wetland Hydro Primary Indicato Surface Wa High Water Saturation (Water Mark	S = sand; Si = 4". SY slogy Indicators prs (minimum of ater (A1) Table (A2) (A3) (A3) (ss (B1)		water-Stained Le Water-Stained Le 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr	eaves (B9) (except 4B) rates (B13)	very fine; +	= heavy (more of Secondary In Water-Sta 4A, an Drainage Dry-Seas	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2)	equired) //LRA 1, 2,
Depth (inches) Remarks: Rock refusal @ HYDROLOG Wetland Hydro Primary Indicato Surface Wa High Water Saturation (Water Mark Sediment D	S = sand; Si = 4". SY blogy Indicators prs (minimum of ater (A1) Table (A2) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3)		Check all that apply) Water-Stained Le 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide	eaves (B9) (except 4B) rates (B13) e Odor (C1)	very fine; +	= heavy (more of <u>Secondary In</u> Water-Sta 4A, an Drainage Dry-Seas Saturation	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im	equired) //LRA 1, 2,
Depth (inches) Remarks: Rock refusal @ HYDROLOG Vetland Hydro Primary Indicato Surface Wa High Water Saturation (, Water Mark Sediment D Drift Deposi	S = sand; Si = 4". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3)		theck all that apply) Water-Stained Le 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp	eaves (B9) (except 4B) rates (B13) e Odor (C1) oheres along Living	very fine; +	= heavy (more of <u>Secondary In</u> Water-Sta 4A, an Drainage Dry-Seas Saturation Geomorp	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2)	equired) //LRA 1, 2,
Depth (inches) Remarks: Rock refusal @ HYDROLOG Wetland Hydro Primary Indicato Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or	S = sand; Si = 4". SY logy Indicators prs (minimum of ater (A1) Table (A2) (A3		Check all that apply) Water-Stained Le 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Red	eaves (B9) (except 4B) rates (B13) e Odor (C1) oheres along Living uced Iron (C4)	wery fine; +	= heavy (more of <u>Secondary In</u> Water-Sta 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3)	equired) //LRA 1, 2,
Depth (inches) Remarks: Rock refusal @ HYDROLOG Wetland Hydro Primary Indicato Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposi	S = sand; Si = 4". SY blogy Indicators ors (minimum of ater (A1) \cdot Table (A2) (A3		Check all that apply) Water-Stained Le 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Red Recent Iron Redu	eaves (B9) (except 4B) rates (B13) e Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soils	Roots (C3)	= heavy (more of <u>Secondary In</u> Water-Sta 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3) tral Test (D5)	equired) //LRA 1, 2, //agery (C9)
Depth (inches) Remarks: Rock refusal @ HYDROLOG Vetland Hydro Primary Indicato Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposit Surface Soi	S = sand; Si = 4". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3	: one required; o	Check all that apply) Water-Stained Le 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Red Recent Iron Redu Stunted or Stress	eaves (B9) (except 4B) rates (B13) e Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soils sed Plants (D1) (LF	Roots (C3)	= heavy (more of <u>Secondary In</u> Water-St: 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu Raised A	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3) tral Test (D5) nt Mounds (D6) (LRF	lay) <u>equired)</u> /ILRA 1, 2,) hagery (C9) R A)
Depth (inches) Remarks: Rock refusal @ HYDROLOG Wetland Hydrol Primary Indicato Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposit Surface Soi Inundation \	S = sand; Si = 4". SY logy Indicators prs (minimum of ater (A1) Table (A2) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (Case (B1) (Case (B2)) its (B3) r Crust (B4) its (B5) il Cracks (B6) Visible on Aerial	s: one required; c	Check all that apply) Water-Stained Le 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Red Recent Iron Redu Stunted or Stress Other (Explain in	eaves (B9) (except 4B) rates (B13) e Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soils sed Plants (D1) (LF	Roots (C3)	= heavy (more of <u>Secondary In</u> Water-St: 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu Raised A	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3) tral Test (D5)	lay) <u>equired)</u> /ILRA 1, 2,) hagery (C9) R A)
Depth (inches) Remarks: Rock refusal @ HYDROLOG Wetland Hydro Primary Indicato Surface Wa High Water Saturation (, Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposi Surface Soi Inundation \ Sparsely Ve	S = sand; Si = 4". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3	s: one required; c	Check all that apply) Water-Stained Le 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Red Recent Iron Redu Stunted or Stress Other (Explain in	eaves (B9) (except 4B) rates (B13) e Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soils sed Plants (D1) (LF	Roots (C3)	= heavy (more of <u>Secondary In</u> Water-St: 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu Raised A	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3) tral Test (D5) nt Mounds (D6) (LRF	lay) <u>equired)</u> /ILRA 1, 2,) hagery (C9) R A)
Depth (inches) Remarks: Rock refusal @ HYDROLOG Wetland Hydrol Primary Indicato Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposit Surface Soi Inundation N Sparsely Ve	S = sand; Si = 4". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3	s: one required; c	Check all that apply) Water-Stained Le 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Red Recent Iron Redu Stunted or Stress Other (Explain in	eaves (B9) (except 4B) a Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soils sed Plants (D1) (LR Remarks)	Roots (C3)	= heavy (more of <u>Secondary In</u> Water-St: 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu Raised A	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3) tral Test (D5) nt Mounds (D6) (LRF	lay) <u>equired)</u> /ILRA 1, 2,) hagery (C9) R A)
Depth (inches) Remarks: Rock refusal @ HYDROLOG Wetland Hydro Primary Indicato Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposi Surface Soi Inundation V Sparsely Ve Field Observati	S = sand; Si = 4". SY Plogy Indicators prs (minimum of ater (A1) Table (A2) (A3) (A) (A) (A) (A) (A) (A) (A) (A	s: one required; c	Water-Stained Legend 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Red Recent Iron Redu Stunted or Stress Other (Explain in No X	eaves (B9) (except 4B) rates (B13) e Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soils sed Plants (D1) (LF	Roots (C3)	= heavy (more of <u>Secondary In</u> Water-St: 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu Raised A	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3) tral Test (D5) nt Mounds (D6) (LRF	lay) <u>equired)</u> /ILRA 1, 2,) hagery (C9) R A)
Depth (inches) Remarks: Rock refusal @ HYDROLOG Wetland Hydro Primary Indicato Surface Wa High Water Saturation (, Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposi Surface Soi Inundation \ Sparsely Ve	S = sand; Si = 4". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3) (A3) (A3) (A3) (A3) (Case (B1) Deposits (B2) its (B3) r Crust (B4) its (B5) il Cracks (B6) Visible on Aerial egetated Concav ions: Present?	in the second se	Check all that apply) Water-Stained Le 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Red Recent Iron Redu Stunted or Stress Other (Explain in	eaves (B9) (except 4B) a Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soils sed Plants (D1) (LR Remarks)	Roots (C3)	= heavy (more of <u>Secondary In</u> Water-St 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu Raised A Frost-Hea	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3) tral Test (D5) nt Mounds (D6) (LRF	equired) //LRA 1, 2, // hagery (C9) R A)
Depth (inches) Remarks: Rock refusal @ HYDROLOG Wetland Hydro Primary Indicato Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposi Surface Soi Inundation V Sparsely Ve Field Observati Surface Water I Water Table Pro	S = sand; Si = 4". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (Case (B4)) (B4) (B5) (B4) (B5) (I) (I) (I) (I) (I) (I) (I) (I	S: Tone required; of Tone requ	Check all that apply) Water-Stained Letter 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Red Recent Iron Redu Stunted or Stress Other (Explain in No X No X No X	eaves (B9) (except 4B) rates (B13) e Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soils sed Plants (D1) (LR Remarks) Depth (inches):	Roots (C3)	= heavy (more of <u>Secondary In</u> Water-St 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu Raised A Frost-Hea	clay); - = light (less cl dicators (2 or more re ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3) tral Test (D5) nt Mounds (D6) (LRF ave Hummocks (D7)	equired) //LRA 1, 2, // hagery (C9) R A)
Depth (inches) Remarks: Rock refusal @ HYDROLOG Wetland Hydrol Primary Indicato Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposit Surface Soi Inundation N Sparsely Ve Field Observati Surface Water I Water Table Pro Saturation Press (includes capilla	S = sand; Si = 4". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3	s: one required; of l Imagery (B7) ve Surface (B8) Yes Yes Yes	Check all that apply) Water-Stained Letter 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Red Recent Iron Redu Stunted or Stress Other (Explain in No X No X No X No X	eaves (B9) (except 4B) rates (B13) e Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soils sed Plants (D1) (LR Remarks) Depth (inches): Depth (inches):	very fine; +	= heavy (more of <u>Secondary In</u> Water-Sta 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu Raised A Frost-Hea Wetland	clay); - = light (less cl dicators (2 or more m ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3) tral Test (D5) nt Mounds (D6) (LRF ave Hummocks (D7)	equired) //LRA 1, 2, // hagery (C9) R A)
Depth (inches) Remarks: Rock refusal @ HYDROLOG Primary Indicato Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposi Surface Soi Inundation V Sparsely Ve Field Observati Surface Water I Water Table Pro Saturation Press (includes capilla	S = sand; Si = 4". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3	s: one required; of l Imagery (B7) ve Surface (B8) Yes Yes Yes	Check all that apply) Water-Stained Letter 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Red Recent Iron Redu Stunted or Stress Other (Explain in No X No X No X	eaves (B9) (except 4B) rates (B13) e Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soils sed Plants (D1) (LR Remarks) Depth (inches): Depth (inches):	very fine; +	= heavy (more of <u>Secondary In</u> Water-Sta 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu Raised A Frost-Hea Wetland	clay); - = light (less cl dicators (2 or more m ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3) tral Test (D5) nt Mounds (D6) (LRF ave Hummocks (D7)	equired) //LRA 1, 2, // hagery (C9) R A)
Depth (inches) Remarks: Rock refusal @ HYDROLOG Primary Indicato Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposit Surface Soi Inundation N Sparsely Ve Field Observati Surface Water I Water Table Pro Saturation Press (includes capilla	S = sand; Si = 4". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3	s: one required; of l Imagery (B7) ve Surface (B8) Yes Yes Yes	Check all that apply) Water-Stained Letter 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Red Recent Iron Redu Stunted or Stress Other (Explain in No X No X No X No X	eaves (B9) (except 4B) rates (B13) e Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soils sed Plants (D1) (LR Remarks) Depth (inches): Depth (inches):	very fine; +	= heavy (more of <u>Secondary In</u> Water-Sta 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu Raised A Frost-Hea Wetland	clay); - = light (less cl dicators (2 or more m ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3) tral Test (D5) nt Mounds (D6) (LRF ave Hummocks (D7)	equired) //LRA 1, 2, // hagery (C9) R A)

Project/Site: Hop Hill Wetland Delineation		City/County:	Benton		Sampling Date	e: <u>6/30/2022</u>	
Applicant/Owner: HOHI				State: OR	Sampling	Point: S	SP13
Investigator(s): Jessalynn Spears		Section, T	Township, Range	e: T10NR24E			
Landform (hillslope, terrace, etc.): stream bank			Local relief ((concave, convex, none):	convex	Slope (%):	3
Subregion (LRR): A, Northwest Forests and Coast	Lat	46.340605	Lon	g: <u>-119.871419</u>	Datum	n: NAD 1983	
Soil Map Unit Name: Shano silt loam, 8 to 1	5 percent slopes			NWI	classification:		
Are climatic / hydrologic conditions on the site typical			Yes			lain in Remai	
	Hydrology			re "Normal Circumstand	•	Yes X N	vo
Are Vegetation,Soil, or SUMMARY OF FINDINGS – Attach site	Hydrology			f needed, explain any a			
Hydrophytic Vegetation Present? Yes				ions, transects, in	iportant lea	tures, etc	-
Hydric Soil Present? Yes			Is the Sampl	led Area			
Wetland Hydrology Present? Yes			within a Wet		No	x	
Precipitation prior to fieldwork: 0.1 inch in prior t				103		<u> </u>	
Remarks:	We weeke						
Bank below OHW next to wetland.							
VEGETATION]
	Absolute	Dominant	Indicator	Dominance Test wo	rksheet:		
<u>Tree Stratum</u> (Plot size: <u>30' r</u>)	<u>% Cover</u>	Species?	Status	Number of Dominant			
1.	-			That Are OBL, FACW		0 ((A)
2.						<u> </u>	,
3.				Total Number of Dom	ninant		
4.				Species Across All S	trata:	1 ((B)
	0% = Tot	al Cover					
Sapling/Shrub Stratum (Plot size: <u>10' r</u>)				Percent of Dominant	Species		
1				That Are OBL, FACW	/, <u>or FAC:</u>	<u>0%</u> ((A/B)
2.				Prevalence Index w	orksheet:		
3.				Total % Cover o	f: <u>Multiply by</u>	/:	_
4.			- <u> </u>	OBL species	0 x 1 =	0	
5				FACW species	0 x 2 =	0	
	0%= Tot	al Cover		FAC species	4 x 3 =	12	
<u>Herb Stratum</u> (Plot size: <u>5' r</u>)					7 x 4 =	28	
1. Geranium dissectum	70%	Yes	NOL		35 x 5 =	425	
2. Bromus tectorum	15%	No	NOL		96 (A)	465	(B)
3. Sisymbrium altissimum	5%	No	FACU	Prevalence Inde		<u>4.84</u>	
4. Lolium perenne	3%	No	FAC	Hydrophytic Vegeta			
5. Bromus hordeaceus	2%	No	FACU	1 - Rapid Test for		egetation	
6. <u>unknown grass</u>	1%	No	FAC ?	2 - Dominance To			
7.				3 - Prevalence In			
8				4 - Morphological			orting
9					rks or on a sepa	. ,	
10				5 - Wetland Non-			
11				Problematic Hydr	. , ,	· ·	,
Woody Vine Stratum (Plot size: <u>10' r</u>)	<u>96%</u> = Tot	al Cover		¹ Indicators of hydric s be present.	oil and wetland	hydrology m	ust
1.				be present.			
2.				Hydrophytic			
	0%= Tot	al Cover		Vegetation	Yes N	• <u>X</u>	
% Bare Ground in Herb Stratum 4%	_			Present?			
Remarks:				Entere	d by: KS (QC by: JS	

SOIL Brofile D

Depth	N	Matrix		Redox Featu	ires			
(inches)	Color (moist		Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-6"	10YR 3/2	<u>, 70</u> 100		/0	Турс	LUC	SiL	
0-0	10113/2	100						dry
		_				·		
		_						
				<u> </u>				
				<u> </u>				
		_						
		_						
<i>.</i>		•	educed Matrix CS=Cove		d Grains.		Pore Lining, M=Matr	
-		cable to all LR	Rs, unless otherwise n				r Problematic Hydr	ic Soils":
Histosol (A1	1)		Sandy Redox (S5	5)		2 cm Muc	:k (A10)	
Histic Epipe	edon (A2)		Stripped Matrix (S	S6)		Red Pare	nt Material (TF2)	
Black Histic	c (A3)		Loamy Mucky Mi	neral (F1) (except	MLRA 1)	Very Sha	llow Dark Surface (T	F12)
Hydrogen S	Sulfide (A4)		Loamy Gleyed M	atrix (F2)		Other (Ex	plain in Remarks)	
Depleted Be	elow Dark Surfa	ce (A11)	Depleted Matrix ((F3)				
Thick Dark	Surface (A12)		Redox Dark Surfa	ace (F6)		³ Indicators of	hydrophytic vegetati	on and
Sandy Muck	ky Mineral (S1)		Depleted Dark St	urface (F7)		wetland hyd	Irology must be pres	ent,
Sandy Gley	ed Matrix (S4)		Redox Depressio	ons (F8)		unless distu	rbed or problematic.	
estrictive Lay	ver (if present):							
Type: Depth (inches)):				н	ydric Soil Pres	ent? Yes	No X
Depth (inches) Remarks:	S = sand; Si =	silt; C = clay; L	= loam or loamy; co = c	oarse; f = fine; vf =		-		
Depth (inches)	S = sand; Si =	silt; C = clay; L	= loam or loamy; co = c	oarse; f = fine; vf =		-		
Depth (inches) Remarks: Rock refusal @	S = sand; Si = 6".	silt; C = clay; L	= loam or loamy; co = c	oarse; f = fine; vf =		-		
Depth (inches) Remarks: Rock refusal @	S = sand; Si = 6".		= loam or loamy; co = c	oarse; f = fine; vf =		-		
Depth (inches) Remarks: Rock refusal @ HYDROLOG Vetland Hydrol	S = sand; Si = 6". GY logy Indicators		= loam or loamy; co = c check all that apply)	oarse; f = fine; vf =		= heavy (more o		
Depth (inches) Remarks: Rock refusal @ HYDROLOG Vetland Hydrol Primary Indicato	S = sand; Si = 6". SY logy Indicators		check all that apply)	oarse; f = fine; vf =	very fine; +	= heavy (more o <u>Secondary In</u>	clay); - = light (less c	equired)
Depth (inches) temarks: tock refusal @ IYDROLOG Vetland Hydrol rimary Indicato Surface Wa	S = sand; Si = 6". BY logy Indicators ors (minimum of ater (A1)		check all that apply)	eaves (B9) (excep	very fine; +	= heavy (more o <u>Secondary In</u> Water-Sta	clay); - = light (less c dicators (2 or more r ained Leaves (B9) (N	equired)
Depth (inches) iemarks: lock refusal @ IYDROLOG /etland Hydrol rimary Indicato Surface Wa High Water	S = sand; Si = 6". Comparent Si = SY Comparent S		check all that apply) Water-Stained Le 1, 2, 4A, and 4	eaves (B9) (excep	very fine; +	= heavy (more o <u>Secondary In</u> Water-Sta 4 A, an	clay); - = light (less c dicators (2 or more r ained Leaves (B9) (N d 4B)	equired)
Depth (inches) Remarks: Rock refusal @ HYDROLOG Vetland Hydrol rimary Indicato Surface Wa High Water Saturation (S = sand; Si = 6". SY logy Indicators prs (minimum of ater (A1) Table (A2) (A3)		check all that apply) Water-Stained Le 1, 2, 4A, and 4 Salt Crust (B11)	eaves (B9) (excep 1B)	very fine; +	= heavy (more o <u>Secondary In</u> Water-Sta Drainage	clay); - = light (less c dicators (2 or more r ained Leaves (B9) (N d 4B) Patterns (B10)	equired) //LRA 1, 2,
Depth (inches) emarks: ock refusal @ IYDROLOG /etland Hydrol rimary Indicato Surface Wa Surface Wa High Water Saturation (Water Mark	S = sand; Si = 6". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3) (xs (B1)		<u>check all that apply)</u> <u>Water-Stained Le</u> 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr	eaves (B9) (excep 4B) rates (B13)	very fine; +	= heavy (more of Secondary Ind Water-Sta 4A, an Drainage Dry-Seas	clay); - = light (less c dicators (2 or more r ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2)	lay) equired) /ILRA 1, 2,
Depth (inches) emarks: ock refusal @ IYDROLOG IVDROLOG IVDROLOG IVDROLOG Setland Hydrol imary Indicato Surface Wa High Water Saturation (Water Mark Sediment D	S = sand; Si = 6". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3		<u>check all that apply)</u> <u>Water-Stained Le</u> 1, 2, 4A, and 4 Salt Crust (B11) <u>A</u> quatic Invertebr <u>Hydrogen Sulfide</u>	eaves (B9) (excep r 1B) rates (B13) e Odor (C1)	t MLRA	= heavy (more of Secondary In Water-Sta 4A, an Drainage Dry-Seas Saturation	clay); - = light (less c dicators (2 or more r ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Irr	lay) equired) /ILRA 1, 2,
Depth (inches) emarks: lock refusal @ IYDROLOG /etland Hydrod rimary Indicato Surface Wa Saturation (, Saturation (,))))))))))))))))))))))))))	S = sand; Si = 6". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3)		check all that apply) Water-Stained Le 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp	eaves (B9) (excep r 1B) rates (B13) e Odor (C1) oheres along Living	t MLRA	= heavy (more of <u>Secondary Ind</u> Water-Sta 4A, an Drainage Dry-Seas Saturation Geomorp	clay); - = light (less c dicators (2 or more r ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2)	lay) equired) /ILRA 1, 2,
Depth (inches) emarks: ock refusal @ IYDROLOG /etland Hydrol rimary Indicato Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or	S = sand; Si = 6". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3		check all that apply) Water-Stained Le 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Red	eaves (B9) (excep 4B) eates (B13) e Odor (C1) oheres along Living uced Iron (C4)	t MLRA	= heavy (more of <u>Secondary In</u> Water-Sta 4A, an Drainage Dry-Seas Saturation Geomorp Shallow <i>A</i>	clay); - = light (less c dicators (2 or more r ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3)	lay) equired) /ILRA 1, 2,
Depth (inches) temarks: tock refusal @ HYDROLOG Vetland Hydrol rimary Indicato Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposi	S = sand; Si = 6". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3		check all that apply) Water-Stained Le 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu	eaves (B9) (excep 4B) rates (B13) e Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soil	t MLRA	= heavy (more of <u>Secondary In</u> Water-Sta 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu	clay); - = light (less c dicators (2 or more r ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Irr hic Position (D2) Aquitard (D3) tral Test (D5)	lay) equired) /ILRA 1, 2, hagery (C9)
Depth (inches) Remarks: Rock refusal @ IYDROLOG Vetland Hydrol Irimary Indicato Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposi Surface Soi	S = sand; Si = 6". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3	: one required;	check all that apply) Water-Stained Le 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Stunted or Stress	eaves (B9) (excep 1B) eates (B13) e Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soil sed Plants (D1) (L F	t MLRA	= heavy (more of <u>Secondary In</u> Water-Sta 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu Raised A	clay); - = light (less c dicators (2 or more r ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3) tral Test (D5) nt Mounds (D6) (LRI	equired) //LRA 1, 2, // nagery (C9)
Depth (inches) emarks: ock refusal @ IYDROLOG /etland Hydrol rimary Indicato Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposi Surface Soi Inundation V	S = sand; Si = 6". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3	s: one required;	check all that apply) Water-Stained Le 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Stunted or Stress Other (Explain in	eaves (B9) (excep 1B) eates (B13) e Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soil sed Plants (D1) (L F	t MLRA	= heavy (more of <u>Secondary In</u> Water-Sta 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu Raised A	clay); - = light (less c dicators (2 or more r ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Irr hic Position (D2) Aquitard (D3) tral Test (D5)	lay) <u>equired)</u> /ILRA 1, 2,) hagery (C9) R A)
Depth (inches) emarks: ock refusal @ IYDROLOG IVDROLOG IVDROLOG Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposi Surface Soi Inundation V Sparsely Ve	S = sand; Si = 6". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3) (A3) (A3) (A3) (A3) (Case (B1) Deposits (B2) its (B3) r Crust (B4) its (B5) il Cracks (B6) Visible on Aerial egetated Concar	s: one required;	check all that apply) Water-Stained Le 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Stunted or Stress Other (Explain in	eaves (B9) (excep 1B) eates (B13) e Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soil sed Plants (D1) (L F	t MLRA	= heavy (more of <u>Secondary In</u> Water-Sta 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu Raised A	clay); - = light (less c dicators (2 or more r ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3) tral Test (D5) nt Mounds (D6) (LRI	lay) <u>equired)</u> /ILRA 1, 2,) hagery (C9) R A)
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Depth (inches) temarks: tock refusal @ IYDROLOG Vetland Hydro Irimary Indicato Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposi Surface Soi Inundation V Sparsely Ve ield Observati	S = sand; Si = 6". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3	s: one required;	<u>check all that apply</u> Water-Stained Le 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Stunted or Stress Other (Explain in)	eaves (B9) (excep 1B) eates (B13) e Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soil sed Plants (D1) (L F	t MLRA	= heavy (more of <u>Secondary In</u> Water-Sta 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu Raised A	clay); - = light (less c dicators (2 or more r ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3) tral Test (D5) nt Mounds (D6) (LRI	equired) //LRA 1, 2, // nagery (C9)
Depth (inches) Remarks: Rock refusal @ HYDROLOG Vetland Hydrol Primary Indicato Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposi Surface Soi Inundation (S = sand; Si = 6". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3) (A3) (A3) (A3) (A3) (Case (B1) Deposits (B2) its (B3) r Crust (B4) its (B5) il Cracks (B6) Visible on Aerial egetated Concav ions: Present?	: one required; Imagery (B7) ve Surface (B8	<u>check all that apply</u> <u>Water-Stained Let</u> 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Stunted or Stress Other (Explain in)	eaves (B9) (excep 4B) rates (B13) e Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soil- sed Plants (D1) (LF Remarks)	t MLRA	= heavy (more of <u>Secondary In</u> Water-Sta 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu Raised Al Frost-Hea	clay); - = light (less c dicators (2 or more r ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3) tral Test (D5) nt Mounds (D6) (LRI	equired) //LRA 1, 2, // hagery (C9) R A)
Depth (inches) Remarks: Rock refusal @ HYDROLOG Vetland Hydrol Primary Indicato Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposi Surface Soi Inundation V Sparsely Ve Gield Observati Surface Water I Nater Table Pro	S = sand; Si = 6". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (Case (B4) (B4) (B5) (B5) (Case (B6) Visible on Aerial egetated Concav ions: Present? Sent?	s: one required; I Imagery (B7) ve Surface (B8 Yes	check all that apply)	eaves (B9) (except 4B) rates (B13) e Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soil sed Plants (D1) (LF Remarks) Depth (inches):	t MLRA	= heavy (more of <u>Secondary In</u> Water-Sta 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu Raised Al Frost-Hea	clay); - = light (less c dicators (2 or more r ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3) tral Test (D5) nt Mounds (D6) (LRI ave Hummocks (D7)	equired) //LRA 1, 2, // hagery (C9) R A)
Depth (inches) Remarks: Rock refusal @ HYDROLOG Vetland Hydrol Primary Indicato Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposi Surface Soi Inundation V Sparsely Ve ield Observati Surface Water I Nater Table Pro Saturation Pres includes capilla	S = sand; Si = 6". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3	s: one required; I Imagery (B7) ve Surface (B8 Yes Yes Yes	check all that apply) Water-Stained Letter 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Stunted or Stress Other (Explain in) No X No X No X	eaves (B9) (excep 4B) rates (B13) e Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soil: sed Plants (D1) (LF Remarks) Depth (inches): Depth (inches):	t MLRA t MLRA s (C6) RR A)	= heavy (more of <u>Secondary Ind</u> Water-Sta 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu Raised A Frost-Hea Wetland	clay); - = light (less c dicators (2 or more r ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3) tral Test (D5) nt Mounds (D6) (LRI ave Hummocks (D7)	equired) //LRA 1, 2, // hagery (C9) R A)
Depth (inches) emarks: ock refusal @ IYDROLOG /etland Hydrol rimary Indicato Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposi Surface Soi Inundation V Sparsely Ve ield Observati Surface Water I Vater Table Pro Saturation Pres includes capilla	S = sand; Si = 6". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3	s: one required; I Imagery (B7) ve Surface (B8 Yes Yes Yes	check all that apply)	eaves (B9) (excep 4B) rates (B13) e Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soil: sed Plants (D1) (LF Remarks) Depth (inches): Depth (inches):	t MLRA t MLRA s (C6) RR A)	= heavy (more of <u>Secondary Ind</u> Water-Sta 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu Raised A Frost-Hea Wetland	clay); - = light (less c dicators (2 or more r ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3) tral Test (D5) nt Mounds (D6) (LRI ave Hummocks (D7)	equired) //LRA 1, 2, // hagery (C9) R A)
Depth (inches) emarks: ock refusal @ IYDROLOG /etland Hydrol rimary Indicato Surface Wa High Water Saturation (Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposi Surface Soi Inundation V Sparsely Ve ield Observati Surface Water I Vater Table Pro Saturation Pres includes capilla	S = sand; Si = 6". SY logy Indicators ors (minimum of ater (A1) Table (A2) (A3) (A3) (A3) (A3) (A3) (A3) (A3) (A3	s: one required; I Imagery (B7) ve Surface (B8 Yes Yes Yes	check all that apply) Water-Stained Letter 1, 2, 4A, and 4 Salt Crust (B11) Aquatic Invertebr Hydrogen Sulfide Oxidized Rhizosp Presence of Redu Recent Iron Redu Stunted or Stress Other (Explain in) No X No X No X	eaves (B9) (excep 4B) rates (B13) e Odor (C1) oheres along Living uced Iron (C4) uction in Tilled Soil: sed Plants (D1) (LF Remarks) Depth (inches): Depth (inches):	t MLRA t MLRA s (C6) RR A)	= heavy (more of <u>Secondary Ind</u> Water-Sta 4A, an Drainage Dry-Seas Saturation Geomorp Shallow A FAC-Neu Raised A Frost-Hea Wetland	clay); - = light (less c dicators (2 or more r ained Leaves (B9) (N d 4B) Patterns (B10) on Water Table (C2) n Visible on Aerial Im hic Position (D2) Aquitard (D3) tral Test (D5) nt Mounds (D6) (LRI ave Hummocks (D7)	equired) //LRA 1, 2, // hagery (C9) R A)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc. Hydrophylic Vegetation Present? Yes X No Is the Sampled Area within a Wetland? Yes X No Yedic Soil Present? Yes No Is the Sampled Area within a Wetland? Yes X No Precipitation profile Vegetation Present? Yes No Indicator No Indicator VEGETATION Absolute Dominant Indicator Number of Dominant Species Indicator 1 Absolute Dominant Status Number of Dominant Species Indicator Indi	Project/Site: Hop Hill Wetland Delineation		City/County:	Benton		Sampling Date: 6	/30/2022
Landform (ultiskes, termax, etc) stepam bod Local relatier (concers, convex, nons);	Applicant/Owner: HOHI				State: OR	Sampling Po	int: SP14
Subregion (LRR): A. Northwest Forests and Coast Lat: 46.340587 Long119.871420 Datum: NAD 1983 Soli Map Unit Name: Stata s att Leam. 8 to 15 percent slopes NVM classification: NVM classification: Are Vagetation Soli M. or Hydrology alignificantly disturbed? Yas No (If no. explain in Remarks.) SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc. Hydrophydio Vagetation Present? Yes No Hydrophydio Vagetation Present? Yes No is the Sampled Area within a Wetland? Yes X No Projektation prior to flatbacki: 0.1 inch in prior two weeks Remarks: Indicator Indicator VECETATION Absolute Dominant Indicator Status No Prevalence finds worksheet: 1.	Investigator(s): Jessalynn Spears		Section, T	ownship, Rang	je: T10NR24E		
Sol Map Un Name: Shano silt born: bits 15 percent signed year? Yes No (If no, explain in Remarks) Ave Scinatic Index Conditions on the site typical for this import year? Yes No (If no, explain in Remarks) Ave Scinatic Index Conditions on the site typical for this import year? Yes No (If no, explain any many site Remarks) Ave Vogetiation _Sol - ort hydrology _significantly disturbed? Ave Twored Concisions, transects, important features, etc. Hydrophyde Vegatation Present? Yes X No is the Sampled Area within a Wetland? Yes Xo	Landform (hillslope, terrace, etc.): stream bed			Local relief	(concave, convex, none):	concave Slo	ope (%): 10
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (ff noc explain in Remarks) Are Vegetation	Subregion (LRR): <u>A, Northwest Forests and Coast</u>		Lat: 46.340587	Lon	ıg: <u>-119.871420</u>	Datum: N	IAD 1983
Are Vegetation	Soil Map Unit Name: Shano silt loam, 8 to 1	15 percent slo	pes		NWI	classification:	
Are Vegretation Soll or Hydrology Indurally problematic? (If needed, explain any answers in Remarks.) SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc. Hydrobytic Vegretation Present? Yes No Hydrobytic Veglation Present? Yes No Is the Sampled Area wthin a Wetland? Yes No Proclustation present? Yes No Is the Sampled Area No Precipitation present? No Precipitation present?	Are climatic / hydrologic conditions on the site typica	I for this time	of year?	Ye	es X No	(If no, explain	in Remarks)
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc. Hydrophylic Vegetation Present? Yes No Is the Sampled Area within a Wetland? Yes X No Wetland Hydrology Present? Yes No Is the Sampled Area within a Wetland? Yes X No Precipitation prior to fieldwork: 0.1 Inch in prior two weeks Remainks: No Is the Sampled Area within a Wetland? Yes X No Precipitation prior to fieldwork: 0.1 Inch in prior two weeks Remainks: No Indicator Dominant Species Indicator Number of Dominant Species Indicator Number of Dominant Species Indicator In		-					
Hydrophylic Vegetation Present? Yes X No Is the Sampled Area Hydrophylic Vegetation Present? Yes No within a Wetland Predocity Present? No Precipitation prior to fieldwork: 0.1 inch in prior two weeks Dominant Indicator Dominance Test worksheet: VEGETATION Absolute Dominant Species? Status Number of Dominant Species 1.							,
Hydric Soil Present? Yes No is the Sampled Area Wetland Hydrology Present? Yes X No Precipitation profered to fieldwork: 0.1 inch in prior two weeks Remarks: VECETATION VECETATION Trae Stratum (Plot size: 30'r.) Absolute Dominant Indicator 1. Absolute Dominant Status That Are OBL; FACW, or FAC: 1 (A) 2.			wing sampling	point locat	ions, transects, in	nportant featur	res, etc.
No. within a Wetland ?? Yes X No	, , , , ,	3 X	No				
Visuality for big yr fasair. res	•	S	No	-			
Remarks: VEGETATION Tee Stratum (Plot size: _00'r.) Absolute Dominant Indicator Secies 1 1. <	, ,		No	within a we	tland? Yes	<u>X No</u>	<u> </u>
Absolute Dominant Indicator Dominance Test worksheet: Tree Stratum (Plot size _ 30' r _) % Cover Species? Status Number of Dominant Species 1.		two weeks					
Tree Stratum (Plot size: _30'r_) % Cover Species? Status Number of Dominant Species 1.	VEGETATION						
1. Initial of offentions operators 2. Total Number of Dominant 3. O% 4. O% 5. Total Number of Dominant Species 1. That Are OBL, FACW, or FAC: 1 2. O% 3. Total Number of Dominant Species 1. That Are OBL, FACW, or FAC: 100% 2. That Are OBL, FACW, or FAC: 100% 3. Officity Officity 4. O Percent of Dominant Species 5. Total % Cover of: Multiply by: 4. O% = Total Cover FACW species 0 x1 = 0 7. O% = Total Cover FACW FACW species 0 x4 = 0 1. Phataris arundinacea 80% Yes FACW Column Totals: 101 (A) 203 (B) 2. Equisetum hyenale 20% No FACW Column Totals: 101 (A) 203 (B) 3. Lolium perenne 1% No FAC <t< td=""><td>l</td><td>Absolute</td><td>Dominant</td><td>Indicator</td><td>Dominance Test wo</td><td>orksheet:</td><td></td></t<>	l	Absolute	Dominant	Indicator	Dominance Test wo	orksheet:	
2.	/	<u>% Cover</u>	Species?	<u>Status</u>	Number of Dominant	Species	
3.					That Are OBL, FACW	V, or FAC:	1 (A)
4.							
O% = Total Cover Percent of Dominant Species 1.	3				Total Number of Dom	ninant	
Saping/Shrub Stratum (Plot size: 10'r) Percent of Dominant Species 1. That Are OBL, FACW, or FAC: 100% (A/B) 2. Total % Cover of: Multiply by: 3. Office 4. Office 5. Office 1. Prevalence Index worksheet: Total % Cover of: Multiply by: 6. Office 7. Office 8. Office 9. Prevalence Index worksheet: 1. Phalaris arundinacea 8. Office 9. Prevalence Index worksheet: 1. Phalaris arundinacea 8. Office 1. Phalaris arundinacea 2. Equisetum hyemale 2.0% No 7. Prevalence Index is \$3.0° 8. Office 9. Office 9. Office 10. Prevalence Index is \$3.0° 11. Office 12. Office 13. Prevalence Index is \$3.0° 14. Morphological Adaptations° (Provide	4				Species Across All S	trata:	1 (B)
1. That Are OBL, FACW, or FAC: 100% (A/B) 2. That Are OBL, FACW, or FAC: 100% (A/B) 3. OBL species 0 x 1 = 0 5. FACW species 0 x 1 = 0 1. Phalaris arundinacea 80% Yes FACW UPL species 0 x 4 = 0 2. Equisetum hyemale 20% No FACW Column Totals: 101 (A) 203 (B) 3. Lolium perenne 1% No FAC Prevalence Index is \$50 0 x 5 = 0 4.		0%	= Total Cover	_			
2.	<u>Sapling/Shrub Stratum</u> (Plot size: <u>10' r</u>)				Percent of Dominant	Species	
3.	1.				That Are OBL, FACW	V, <u>or FAC: 1</u>	<u>00%</u> (A/B)
4.	2.				Prevalence Index w	orksheet:	
5.	3.				Total % Cover o	of: Multiply by:	
0% = Total Cover FAC species 1 x 3 = 3 1. Phalaris arundinacea 80% Yes FACW UPL species 0 x 5 = 0 2. Equisetum hyemale 20% No FACW Column Totals: 101 (A) 203 (B) 3. Lolium perenne 1% No FAC Prevalence Index = B/A = 2.01 4.	4.				OBL species	0 x 1 =	0 _
Herb Stratum (Plot size: <u>5'r</u>) FACW FACU species 0 x 4 = 0 1. Phalaris arundinacea 80% Yes FACW UPL species 0 x 5 = 0 2. Equisetum hyemale 20% No FACW UPL species 0 x 5 = 0 3. Lolium perenne 1% No FAC Prevalence Index = B/A = 2.01 4.	5.				FACW species 1	00 x 2 =	200
I. Phalaris arundinacea 80% Yes FACW UPL species 0 x 5 = 0 2. Equisetum hyemale 20% No FACW Column Totals: 101 (A) 203 (B) 3. Lolium perenne 1% No FAC Prevalence Index = B/A = 2.01 4.		0%	= Total Cover		FAC species	1 x 3 =	3
2. Equisetum hyemale 20% No FACW Column Totals: 101 (A) 203 (B) 3. Lolium perenne 1% No FAC Prevalence Index = B/A = 2.01 4.	<u>Herb Stratum</u> (Plot size: <u>5' r</u>)				FACU species	0 x 4 =	0
2. Equisetum hyemale 20% No FACW Column Totals: 101 (A) 203 (B) 3. Lolium perenne 1% No FAC Prevalence Index = B/A = 2.01 4.	1. Phalaris arundinacea	80%	Yes	FACW	UPL species	0 x 5 =	0
3. Lolium perenne 1% No FAC Prevalence Index = B/A = 2.01 4.	2. Equisetum hyemale	20%	No	FACW	Column Totals: 1	(A)	203 (B)
4.					Prevalence Inde		
6. X 2 - Dominance Test is >50% 7. 3 - Prevalence Index is ≤3.0 ¹ 8. 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) 9. 5 - Wetland Non-Vascular Plants ¹ 10. 11. 11. Problematic Hydrophytic Vegetation ¹ (Explain) 11. 101% = Total Cover Woody Vine Stratum (Plot size: 10' r) 1. 0% = Total Cover Ware Ground in Herb Stratum 0%					Hydrophytic Vegeta	tion Indicators:	
6. X 2 - Dominance Test is >50% 7. 3 - Prevalence Index is ≤3.0 ¹ 8. 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) 9. 5 - Wetland Non-Vascular Plants ¹ 10. 11. 11. Problematic Hydrophytic Vegetation ¹ (Explain) 11. 101% = Total Cover Woody Vine Stratum (Plot size: 10' r) 1. 0% = Total Cover Ware Ground in Herb Stratum 0%	5.				1 - Rapid Test for	r Hydrophytic Vege	tation
8. 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) 9. 5 - Wetland Non-Vascular Plants ¹ 10. 5 - Wetland Non-Vascular Plants ¹ 11. Problematic Hydrophytic Vegetation ¹ (Explain) 11. 101% = Total Cover Woody Vine Stratum (Plot size: 10' r) 1. 0% = Total Cover % Bare Ground in Herb Stratum 0%	6.				X 2 - Dominance T	est is >50%	
8. 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) 9. 5 - Wetland Non-Vascular Plants ¹ 10. 5 - Wetland Non-Vascular Plants ¹ 11. Problematic Hydrophytic Vegetation ¹ (Explain) 11. 101% = Total Cover Woody Vine Stratum (Plot size: 10' r) 1. 0% = Total Cover % Bare Ground in Herb Stratum 0%					3 - Prevalence In	ıdex is ≤3.0 ¹	
9. data in Remarks or on a separate sheet) 10. 5 - Wetland Non-Vascular Plants ¹ 11. Problematic Hydrophytic Vegetation ¹ (Explain) 11. 101% = Total Cover Woody Vine Stratum (Plot size: 10' r) 1. 0% = Total Cover 8 Bare Ground in Herb Stratum 0%							vide supporting
10. 5 - Wetland Non-Vascular Plants ¹ 11. Problematic Hydrophytic Vegetation ¹ (Explain) 11. 101% Woody Vine Stratum (Plot size: 10' r) 1. 10% 2. 0% 0% = Total Cover Wate Ground in Herb Stratum 0%							
11.						-	,
Woody Vine Stratum (Plot size: 10' r) 1. 1. 2. 0% = Total Cover % Bare Ground in Herb Stratum 0%							¹ (Explain)
Woody Vine Stratum (Plot size: 10'r) be present. 1.	····	101%	- Total Cover		·		
1.	Woody Vine Stratum (Plot size: <u>10' r</u>)	10170					llology must
0% = Total Cover Vegetation Yes X No % Bare Ground in Herb Stratum 0% Present?	<u>·····</u>						
% Bare Ground in Herb Stratum 0% Present?	2.				Hydrophytic		
		0%	= Total Cover	_	Vegetation	Yes X No	
Remarks: Entered by: KS QC by: JS	% Bare Ground in Herb Stratum 0%				Present?		
	Remarks:				Entere	d by: KS QC	by: JS

SOIL Brofile D

Dauth		N A - Aulis .			Dedau Ca	- 4			
Depth		Matrix	0/	<u> </u>	Redox Fe		. 2		
(inches)	Color (mois	<u> </u>	%	Color (moist)		Type ¹	Loc ²	Texture	Remarks
0-10	10YR 3/2		95	7.5YR 4/4	5	C	M	SiL	Saturated
ype: C=Conce	entration, D=D	epletion, F	RM=Red	uced Matrix CS=Co	overed or Coated S	and Grains.	² Location: PL	=Pore Lining, M=Matr	ix.
ydric Soil Indic	cators: (Appl	icable to a	all LRRs	s, unless otherwis	e noted.)		Indicators for	or Problematic Hydr	ic Soils ³ :
Histosol (A1))			Sandy Redox	(S5)		2 cm Mu	ck (A10)	
Histic Epiped	don (A2)			Stripped Matrix	x (S6)		Red Pare	ent Material (TF2)	
Black Histic ((A3)			Loamy Mucky	Mineral (F1) (exce	pt MLRA 1)	Very Sha	allow Dark Surface (T	F12)
Hydrogen Su	. ,		•	Loamy Gleyed				xplain in Remarks)	
	low Dark Surf	ace (A11)	•	Depleted Matr				, ,	
	Surface (A12)	()		X Redox Dark S			³ Indicators of	hydrophytic vegetati	on and
	y Mineral (S1)			Depleted Dark			wetland hv	drology must be pres	ent
_ · ·	ed Matrix (S4)			Redox Depres	. ,			urbed or problematic.	
estrictive Laye	. ,								
	S = sand; Si =	silt; C = c	clay; L =	loam or loamy; co :	= coarse; f = fine; v	•	ydric Soil Pres = heavy (more	sent? Yes X clay); - = light (less c	No lay)
Depth (inches): Remarks: S Rock refusal @ 1	S = sand; Si = 10". Y		clay; L =	loam or loamy; co :	= coarse; f = fine; v	•		·	
Depth (inches): Remarks: S Rock refusal @ 1 HYDROLOG Vetland Hydrold	S = sand; Si = 10". Y ogy Indicator	s:			= coarse; f = fine; v	•	= heavy (more	clay); - = light (less c	lay)
Depth (inches): Remarks: Sock refusal @ 1 HYDROLOG Vetland Hydrold	S = sand; Si = 10". Y ogy Indicator	s:		eck all that apply)		/f = very fine; +	= heavy (more	clay); - = light (less c	equired)
Depth (inches): temarks: \$ tock refusal @ 1 IYDROLOG Vetland Hydrold trimary Indicator Surface Wate	S = sand; Si = 10". Y ogy Indicator rs (minimum o rer (A1)	s:		eck all that apply) Water-Stained	Leaves (B9) (exc	/f = very fine; +	= heavy (more Secondary Ir	clay); - = light (less c dicators (2 or more r tained Leaves (B9) (N	equired)
Depth (inches): Remarks: 2 Rock refusal @ 1 IYDROLOG Vetland Hydrold Primary Indicator Surface Wate X High Water 1	S = sand; Si = 10". Y ogy Indicator rs (minimum o ter (A1) Table (A2)	s:		eck all that apply) Water-Stained 1, 2, 4A, an	l Leaves (B9) (exc d 4B)	/f = very fine; +	= heavy (more <u>Secondary Ir</u> <u>Water-States</u>	clay); - = light (less c dicators (2 or more r tained Leaves (B9) (N ad 4B)	equired)
Depth (inches): emarks: 3 ock refusal @ 1 IYDROLOG IYDROLOG /etland Hydrolo rimary Indicator Surface Water 1 XSaturation (A	S = sand; Si = 10". Y ogy Indicator rs (minimum o er (A1) Table (A2) A3)	s:		eck all that apply) Water-Stained 1, 2, 4A, an Salt Crust (B1	l Leaves (B9) (exc o d 4B) 1)	/f = very fine; +	= heavy (more <u>Secondary Ir</u> Water-S 4A, ar Drainage	clay); - = light (less c ndicators (2 or more r tained Leaves (B9) (N nd 4B) Patterns (B10)	equired) //LRA 1, 2,
Depth (inches): emarks: 3 ock refusal @ 1 IYDROLOG IYDROLOG ITMANA /etland Hydrolo rimary Indicator Surface Wate Surface Wate A High Water T Saturation (A Water Marks	S = sand; Si = 10". Y ogy Indicator rs (minimum o rer (A1) Table (A2) A3) s (B1)	s:		eck all that apply) Water-Stained 1, 2, 4A, an Salt Crust (B1 Aquatic Inverte	l Leaves (B9) (exc d 4B) 1) ebrates (B13)	/f = very fine; +	= heavy (more <u>Secondary Ir</u> Water-Si 4A, ar Drainage	clay); - = light (less c adicators (2 or more r tained Leaves (B9) (N ad 4B) Patterns (B10) son Water Table (C2)	equired) ILRA 1, 2,
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Depth (inches): emarks: 9 ock refusal @ 1 IYDROLOG Itland Hydrold rimary Indicator Surface Wate X High Water 1 X Saturation (A Water Marks Sediment De Drift Deposit	S = sand; Si = 10". Y ogy Indicator rs (minimum o rer (A1) Table (A2) A3) s (B1) eposits (B2) s (B3)	s:		eck all that apply) Water-Stained 1, 2, 4A, an Salt Crust (B1 Aquatic Inverte Hydrogen Sulf Oxidized Rhize	l Leaves (B9) (exc d 4B) 1) ebrates (B13) ïde Odor (C1) ospheres along Liv	ept MLRA	= heavy (more <u>Secondary Ir</u> Water-Si 4A, ar Drainage Dry-Seas Saturatic Geomor	clay); - = light (less c idicators (2 or more r tained Leaves (B9) (N id 4B) Patterns (B10) son Water Table (C2) in Visible on Aerial Im- phic Position (D2)	equired) ILRA 1, 2,
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Appendix B

Ground-Level Site Photographs

APPENDIX B

Ground-Level Site Photographs.

Photos taken June 28 – July 1, 2022.

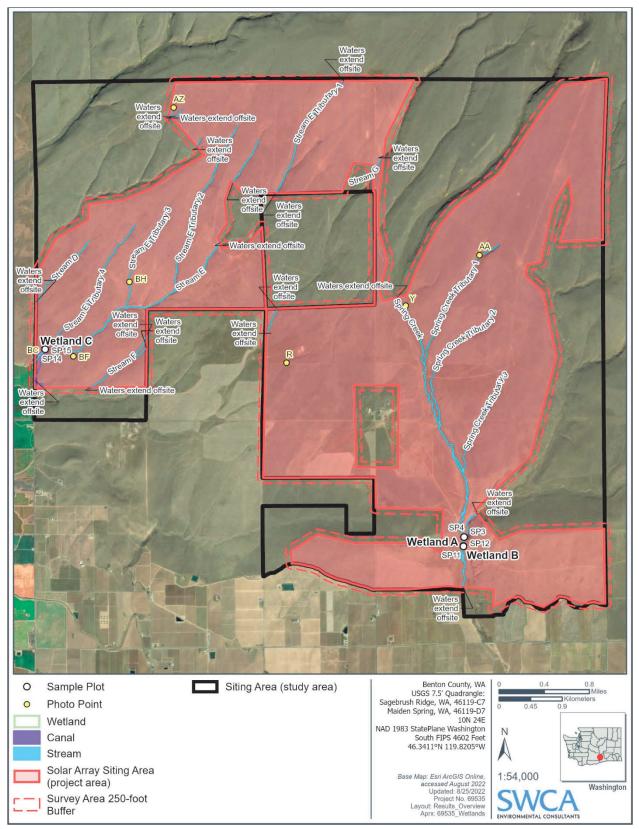


Photo point location map.



Photo 1. Wetland A overview , view to the south.



Photo 2. Wetland A, auger in wetland plot, view to the south.

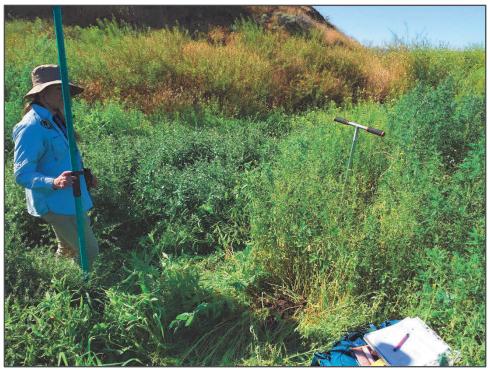


Photo 3. Wetland A, auger in upland plot, view to the south.



Photo 4. Wetland A, trough outlet to wetland.



Photo 5. Wetland A overview, view to the north.



Photo 6. Wetland B overview, view to the south.



Photo 7. Wetland B, auger in wetland plot, upland plot in the foreground, view to the west.



Photo 8. Wetland B, trough outlet to the wetland.



Photo 9. Wetland C, view to the south.



Photo 10. Wetland C, view of wetland plot.



Photo 11. Photo point R, no stream at mapped NWI water, view north.



Photo 12. Photo point R, no stream at mapped NWI water, view south.



Photo 13. Photo point Y, Spring Creek, view to the south, braid enters at turn.



Photo 14. Photo point AA, typical 1-3 foot stream, view to the northeast.



Photo 15. Photo point AZ, typical 1-3 foot stream, view to the south.



Photo 16. Photo point BC, canal, view to the west.



Photo 17. Photo point BH, typical 1-3 foot eroded stream, view to the south.



Photo 18. BF, Stream E, example of braided channel, view to the north.

Appendix C

Wetland Rating Forms and Maps

RATING SUMMARY – Eastern Washington

Name of wetland (or ID #):Wetland ADate of site visit:6/29/2022Rated by Jessalynn Spears & Chris MollerTrained by Ecology?XYesNo Date of training10/09/18

HGM Class used for rating Riverine Wetland has multiple HGM classes? Y X N

NOTE: Form is not complete without the figures requested (figures can be combined). Source of base aerial photo/map <u>ESRI/Google Earth</u>

OVERALL WETLAND CATEGORY _____ (based on functions____ or special characteristics____)

1. Category of wetland based on FUNCTIONS

____Category I – Total score = 22-27

_____Category II – Total score = 19-21

X Category III – Total score = 16-18

Category IV – Total score = 9-15

FUNCTION		nprov iter Q	/ing uality	H	ydrolo	ogic		Habita	at	
		Circle the appropriate ratings								
Site Potential	Н	Μ	L	Η	Μ	L	Н	Μ	L	
Landscape Potential	Н	Μ	L	Н	Μ	L	Н	Μ	L	
Value	Η	Μ	L	Н	Μ	L	Н	Μ	L	TOTAI
Score Based on Ratings		7			6			4		17

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY Circle the appropriate category
Vernal Pools	II III
Alkali	I
Wetland of High Conservation Value	I
Bog and Calcareous Fens	I
Old Growth or Mature Forest – slow growing	I
Aspen Forest	I
Old Growth or Mature Forest – fast growing	II
Floodplain forest	II
None of the above	

Maps and figures required to answer questions correctly for Eastern Washington <u>Depressional Wetlands</u>

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

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	А
Hydroperiods	H 1.2, H 1.3	А
Ponded depressions	R 1.1	А
Boundary of area within 150 ft of the wetland (can be added to another figure)	R 2.4	А
Map of the contributing basin	R 2.2, R 2.3, R 5.2	С
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	А
Width of wetland vs. width of stream (can be added to another figure)	R 4.1	А
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	В
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	С
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	R 3.2, R 3.3	D

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 (can be added to another figure)	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	Н 1.1, Н 1.5	
Hydroperiods	Н 1.2, Н 1.3	
Plant cover of dense trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of dense, rigid trees, shrubs, and herbaceous plants (can be added to figure above)	S 4.1	
Boundary of area within 150 ft of the wetland (can be added to another figure)	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)

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

NO - go to 2

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.

Wetland Rating System for Eastern WA: 2014 Update Rating Form – Effective January 1, 2015 Wetland name or number A

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 wetland 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	Depressional
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.

<u>RIVERINE WETLANDS</u> Water Quality Functions - Indicators that the site functions to improve water quality	Points (only 1 score per box)
R 1.0. Does the site have the potential to improve water quality?	
R 1.1. Area of surface depressions within the Riverine wetland that can trap sediments during a flooding event:	
Depressions cover $>^{1}/_{3}$ area of wetland points = 6	
Depressions cover $> 1/10$ area of wetland points = 3	1
Depressions present but cover $< \frac{1}{10}$ area of wetland points = 1	1
No depressions present points = 0	
R 1.2. Structure of plants in the wetland (areas with >90% cover at person height; not Cowardin classes):	
Forest or shrub $> ^{2}/_{3}$ the area of the wetland points = 10	
Forest or shrub $\frac{1}{3} - \frac{2}{3}$ area of the wetland points = 5	
Ungrazed, herbaceous plants > $^{2}/_{3}$ area of wetland points = 5	5
Ungrazed herbaceous plants $\frac{1}{3} - \frac{2}{3}$ area of wetland points = 2	
Forest, shrub, and ungrazed herbaceous < ¹ / ₃ area of wetland points = 0	
Total for R 1Add the points in the boxes above	6

 Rating of Site Potential
 If score is:
 12-16 = H
 6-11 = M
 0-5 = L

Record the rating on the first page

R 2.0. Does the landscape have the potential to support the water quality function of the site?		
R 2.1. Is the wetland within an incorporated city or within its UGA?	Yes = 2 No = 0	
R 2.2. Does the contributing basin include a UGA or incorporated area?	Yes = 1 No = 0	
R 2.3. Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that within the last 5 years?	have been clearcut Yes = 1 No = 0	1
R 2.4. Is > 10% of the area within 150 ft of wetland in land uses that generate pollutants	Yes = 1 No = 0	1
R 2.5. Are there other sources of pollutants coming into the wetland that are not listed in que	stions	
R 2.1-R 2.4? Source	Yes = 1 No = 0	
Total for R 2Add the points	in the boxes above	2
Rating of Landscape Potential If score is: 3-6 = H 1 or 2 = M 2 = L	Record the rating on t	he first page

R 3.0. Is the water quality improvement provided by the site valuable to society?		
R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drains to c mi?		1
Ye	<mark>es = 1</mark> No = 0	
R 3.2. Does the river or stream have TMDL limits for nutrients, toxics, or pathogens? Ye	<mark>es = 1</mark> No = 0	1
R 3.3. Has the site been identified in a watershed or local plan as important for maintaining water que YES if there is a TMDL for the drainage in which wetland is found.	ality? A <i>nswer</i> es = 2 No = 0	2
Total for R 3Add the points in the	boxes above	4
etime of Velue If score is: 2.4 ± 11 , 1 ± 14 , 0 ± 1	and the nation on	the first way

Rating of Value If score is: 2-4 = H 1 = M 0 = L

Record the rating on the first page

R 4.0. Does the site have the potential to reduce flooding and erosion? R 4.1. Characteristics of the overbank storage the wetland provides: Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of wetland)/(average width of stream between banks). If the ratio is more than 2 points = 10 If the ratio is 1-2 points = 10 If the ratio is ½-<1 points = 4 If the ratio is ½-<1 points = 2 If the ratio is ½-<1 points = 1 R 4.2. Characteristics of plants that slow down water velocities during floods: Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons need to have > 90% cover at person height. These are NOT Cowardin classes). Forest or shrub for more than ² / ₃ the area of the wetland points = 6	Points (only 1 score per box)	<u>RIVERINE WETLANDS</u> Hydrologic Functions - Indicators that site functions to reduce flooding and stream erosion
Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of wetland)/(average width of stream between banks).If the ratio is more than 2points = 10If the ratio is more than 2points = 10If the ratio is 1-2points = 8If the ratio is ½-<1		R 4.0. Does the site have the potential to reduce flooding and erosion?
If the ratio is more than 2points = 10If the ratio is 1-2points = 8If the ratio is ½-<1		Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of wetland)/(average
R 4.2. Characteristics of plants that slow down water velocities during floods: <i>Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons need to have > 90% cover at person height. These are NOT Cowardin classes).</i>	8	If the ratio is more than 2points = 10If the ratio is 1-2points = 8If the ratio is ½-<1
Forest or shrub for $>^1/_3$ area OR emergent plants $>^2/_3$ areapoints = 4Forest or shrub for $>^1/_{10}$ area OR emergent plants $>^1/_3$ areapoints = 2Plants do not meet above criteriapoints = 0	4	R 4.2. Characteristics of plants that slow down water velocities during floods: Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons need to have > 90% cover at person height. These are NOT Cowardin classes).Forest or shrub for more than $^2/_3$ the area of the wetlandpoints = 6Forest or shrub for >1/3 area OR emergent plants > $^2/_3$ areapoints = 4Forest or shrub for > $^1/_{10}$ area OR emergent plants > $^1/_3$ areapoints = 2
Total for R 5Add the points in the boxes above	12	Total for R 5Add the points in the boxes above

R 5.0. Does the landscape have the potential to support the hydrologic functions of the site?			
R 5.1. Is the stream or river adjacent to the wetland downcut?	<mark>Yes = 0</mark> No = 1	0	
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	0	
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	1	
Total for R 5	Add the points in the boxes above	1	
Rating of Landscape Potential If score is: 3 = H 1 or 2 = M 0 = L Record the rating on the		he first page	

R 6.0. Are the hydrologic functions provided by the site valuable to society?	
R 6.1. Distance to the nearest areas downstream that have flooding problems? Choose the description that best fits the site. The sub-basin immediately down-gradient of site has surface flooding problems that result in damage to human or natural resources points = 2 Surface flooding problems are in a basin farther down-gradient points = 1 No flooding problems anywhere downstream	0
R 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 R 6Add the points in the boxes above	0
Rating of Value If score is: 2-4 = H 1 = M 0 = L Record the rating on the second the sec	he first page

These questions apply to wetlands of all HGM classes.	(only 1
HABITAT FUNCTIONS - Indicators that site functions to provide important habitat	score per box)
H 1.0. Does the wetland have the potential to provide habitat for many species?	<u> </u>
H 1.1. Structure of the plant community: Check the Cowardin vegetation classes present and categories of emergent plants. Size threshold for each category is >= ¼ ac or >= 10% of the wetland if wetland is < 2.5 ac. Aquatic bed	
Emergent plants 0-12 in (0-30 cm) high are the highest layer and have > 30% cover Emergent plants >12-40 in (>30-100 cm) high are the highest layer with >30% cover	
Emergent plants > 40 in (> 100 cm) high are the highest layer with >30% coverScrub-shrub (areas where shrubs have >30% cover)4 or more checks: points = 3Forested (areas where trees have >30% cover)3 checks: points = 2End2 checks: points = 1End1 check: points = 0	0
H 1.2. Is one of the vegetation types Aquatic Bed?Yes = 1No = 0	0
 H 1.3. Surface water H 1.3.1. Does the wetland have areas of open water (without emergent or shrub plants) over at least ¼ ac OR 10% of its area during the March to early June OR in August to the end of September? Answer YES for Lake Fringe wetlands. 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 ¼ ac or 10% of its area? Answer yes only if H 1.3.1 is No. Yes = 3 No = 0 	0
 1.4. <u>Richness of plant species</u> Count the number of plant species in the wetland that cover at least 10 ft². Different patches of the same species can be combined to meet the size threshold. You do not have to name the species. 	0
H 1.5. Interspersion of habitats 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.	Figure_
None = 0 points Low = 1 point Moderate = 2 points All three diagrams in this row are Image: Comparison of the second	0

Wetland name or number____A

H 1.6. Special habitat features	
Check the habitat features that are present in the wetland. The number of checks is the number of points.	
Loose rocks larger than 4 in OR large, downed, woody debris (> 4 in diameter) within the area of surface	
ponding or in stream.	
Cattails or bulrushes are present within the wetland.	
Standing snags (diameter at the bottom > 4 in) in the wetland or within 30 m (100 ft) of the edge.	
X Emergent or shrub vegetation in areas that are permanently inundated/ponded.	2
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	
X Invasive species cover less than 20% in each stratum of vegetation (canopy, sub-canopy, shrubs,	
herbaceous, moss/ground cover)	
Total for H 1Add the points in the boxes above	2

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

H 2.0. Does the landscape have the potential to support habitat functions of the site?	
H 2.1. Accessible habitat (only area of habitat abutting wetland). If total accessible habitat is:	
<i>Calculate:</i> % undisturbed habitat <u>0</u> + [(% moderate and low intensity land uses)/2] <u>0</u> = <u>0</u> %	
> ¹ / ₃ (33.3%) of 1 km Polygon points = 3	
20-33% of 1km Polygon points = 2	
10-19% of 1km Polygon points = 1	0
<10% of 1km Polygon points = 0	
H 2.2. Undisturbed habitat in 1 km Polygon around wetland.	
<i>Calculate:</i> % undisturbed habitat + [(% moderate and low intensity land uses)/2] =%	
Undisturbed habitat > 50% of Polygon points = 3	
Undisturbed habitat 10 - 50% and in 1-3 patches points = 2	0
Undisturbed habitat 10 - 50% and > 3 patches points = 1	
Undisturbed habitat < 10% of Polygon points = 0	
H 2.3. Land use intensity in 1 km Polygon:	
> 50% of Polygon is high intensity land use points = (- 2)	
Does not meet criterion above points = 0	-2
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 Yes = 3 No = 0	0
Total for H 2 Add the points in the boxes above	-2
\mathbf{A} and	8

<u>Rating of Landscape Potential</u> If score is: _____4-9 = H ____1-3 = M ____< 1 = L Record the rating on the first page

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? Choose the highest score	
that applies to the wetland being rated	
Site meets ANY of the following criteria: points = 2	
 It has 3 or more priority habitats within 100 m (see Appendix B) 	
 It provides habitat for Threatened or Endangered species (any plant or animal on state or federal lists) 	
 It is mapped as a location for an individual WDFW species 	
 It is a Wetland of High Conservation Value as determined by the Department of Natural Resources 	_
 It has been categorized as an important habitat site in a local or regional comprehensive plan, in a 	1
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	

<u>Rating of Value</u> If score is: <u>2 = H</u> <u>1 = M</u> <u>0 = L</u> 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
Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.	
SC 1.0. Vernal pools	
Is the wetland less than 4000 ft ² , and does it meet at least two of the following criteria?	
 Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input. 	
— Wetland plants are typically present only in the spring; the summer vegetation is typically upland	
annuals. If you find perennial, obligate, wetland plants, the wetland is probably NOT a vernal pool.	
— The soil in the wetland is shallow [< 1 ft (30 cm)deep] and is underlain by an impermeable layer such as	
basalt or clay.	
— Surface water is present for less than 120 days during the wet season.	
Yes – Go to SC 1.1 No = Not a vernal pool	
SC 1.1. Is the vernal pool relatively undisturbed in February and March?	
Yes – Go to SC 1.2 No = Not a vernal pool with special characteristics	
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.)? Yes = Category II No = Category III	Cat. II Cat. III
SC 2.0. Alkali wetlands	
Does the wetland meet one of the following criteria?	
— The wetland has a conductivity > 3.0 mS/cm.	
— 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).	
 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. 	
OR does the wetland unit meet two of the following three sub-criteria?	
— Salt encrustations around more than 75% of the edge of the wetland	
— More than ¾ of the plant cover consists of species listed on Table 4	
 — 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. Yes = Category I No= Not an alkali wetland 	Cat. I
SC 3.0. Wetlands of High Conservation Value (WHCV)	
SC 3.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High	
Conservation Value? Yes – Go to SC 3.2 No – Go to SC 3.3	
SC 3.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = Category I No = Not a WHCV	Cat. I
SC 3.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland?	
http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf	
Yes – Contact WNHP/WDNR and go to SC 3.4 No = Not a WHCV SC 3.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and it is listed	

SC 4.0 Bogs and Calcareous Fens	
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.	
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? See Appendix C for a field key to	
<i>identify organic soils.</i> Yes – Go to SC 4.3 No – Go to SC 4.2	
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? Yes – Go to SC 4.3 No = Is not a bog for rating	
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? Yes = Category I bog No – Go to SC 4.4	
NOTE: 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.	
SC 4.4. Is an area with peats or mucks forested (> 30% cover) with subalpine fir, western red cedar, western	
hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species	
(or combination of species) listed in Table 5 provide more than 30% of the cover under the canopy?	Cat. I
Yes = Category I bog No – Go to SC 4.5	
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? Yes = Is a Calcareous Fen for purpose of rating No – Go to SC 4.6	
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:	
— Marl deposits [calcium carbonate (CaCO ₃) precipitate] occur on the soil surface or plant stems	Cat. I
— The pH of free water is \geq 6.8 AND electrical conductivity is \geq 200 uS/cm at multiple locations within the	
wetland Yes = Is a Category I calcareous fen No = Is not a calcareous fen	

SC 5.0. Forested Wetlands					
Does the wetland have an area of forest rooted within its boundary that meets at least one of					
the following three criteria? (<i>Continue only if you have identified that a forested class is present in question H 1.1</i>)					
— The wetland is within the 100 year floodplain of a river or stream					
— Aspen (<i>Populus tremuloides</i>) represents at least 20% of the total cover of woody species					
— 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)					
Yes – Go to SC 5.1 No = Not a forested wetland with special characteristics					
SC 5.1. Does the wetland have a forest canopy where more than 50% of the tree species (by cover) are slow	Cat. I				
growing native trees (<i>see Table 7</i>)? Yes = Category I No – Go to SC 5.2	cut. I				
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? Yes = Category I No – Go to SC 5.3	Cat. I				
SC 5.3. Does the wetland have at least ¼ acre with a forest canopy where more than 50% of the tree species (by cover) are fast growing species (<i>see Table 7</i>)? Yes = Category II No – Go to SC 5.4	Cat. II				
SC 5.4. Is the forested component of the wetland within the 100 year floodplain of a river or stream?	Cat. II				
Yes = Category II No = Not a forested wetland with special characteristics					
Category of wetland based on Special Characteristics					
Choose the highest rating if wetland falls into several categories					
If you answered No for all types, enter "Not Applicable" on Summary Form					

Appendix B: WDFW Priority Habitats in Eastern Washington

<u>Priority habitats listed by WDFW</u> (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. <u>http://wdfw.wa.gov/publications/00165/wdfw00165.pdf</u> or access the list from here: <u>http://wdfw.wa.gov/conservation/phs/list/</u>)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland: *NOTE: This question is independent of the land use between the wetland 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: <u>Old-growth east of Cascade crest</u> 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. <u>Mature forests</u> 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 > 12 in (30 cm)in eastern 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.

Wetland Rating System for Eastern WA: 2014 Update Effective January 1, 2015 Appendix B This page left blank intentionally



Figure A: Wetland A

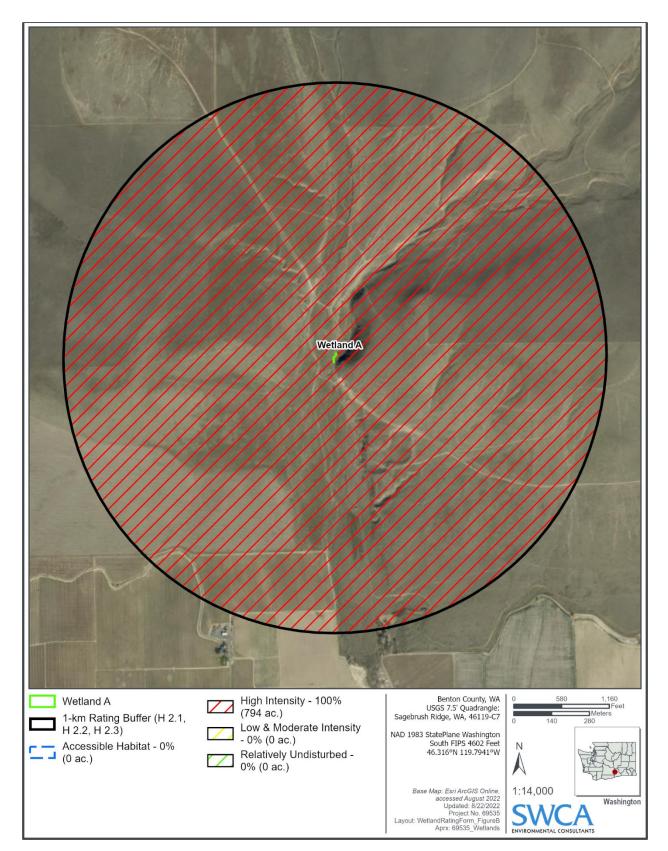


Figure B: Wetland A

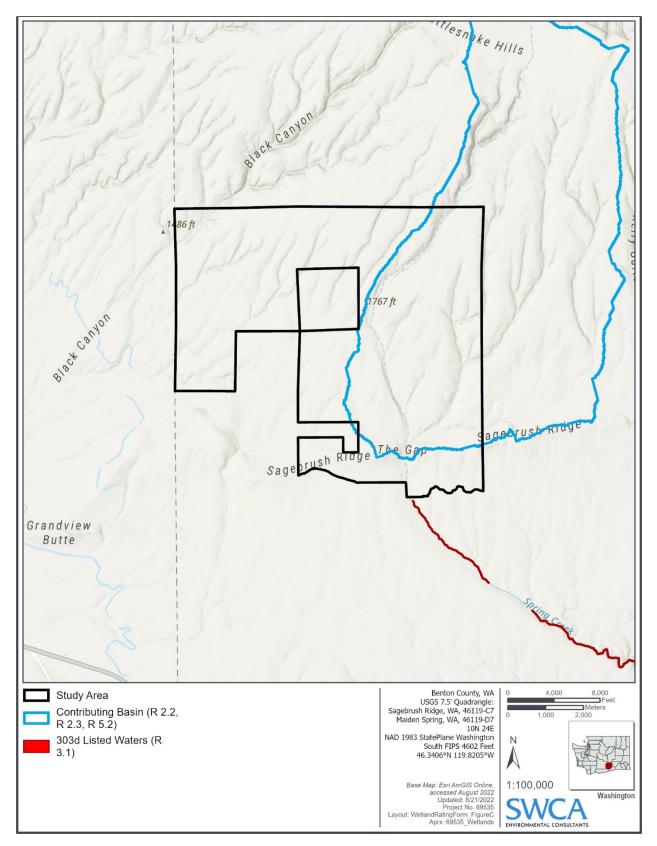


Figure C: Wetland A

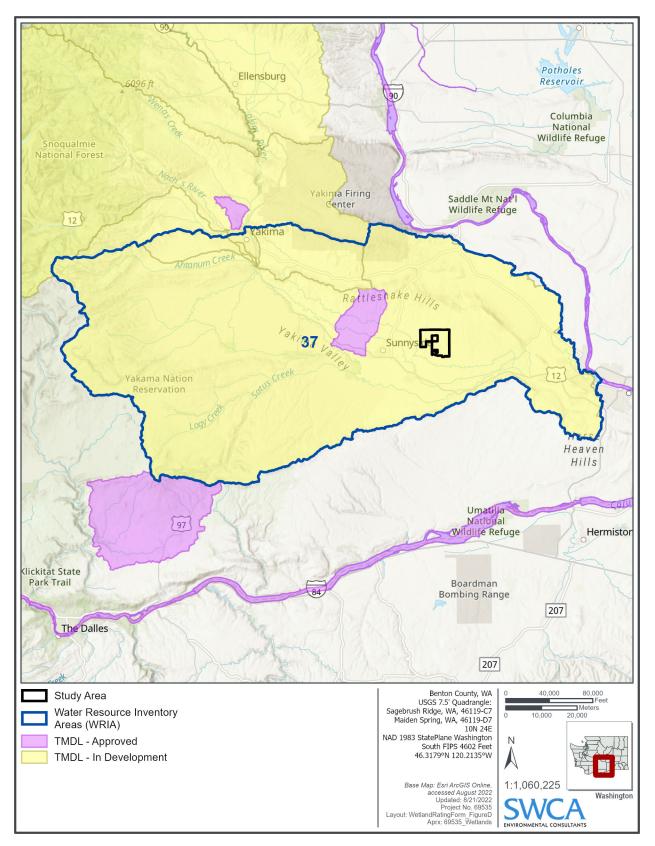


Figure D: Wetland A

RATING SUMMARY – Eastern Washington

Name of wetland (or ID #):Wetland BDate of site visit:6/29/2022Rated by Jessalynn Spears & Chris MollerTrained by Ecology? X YesNo Date of training 10/09/18

HGM Class used for rating Riverine Wetland has multiple HGM classes? Y X N

NOTE: Form is not complete without the figures requested (figures can be combined). Source of base aerial photo/map _ESRI/Google Earth

OVERALL WETLAND CATEGORY _____ (based on functions____ or special characteristics____)

1. Category of wetland based on FUNCTIONS

____Category I – Total score = 22-27

_____Category II – Total score = 19-21

X Category III – Total score = 16-18

__Category IV – Total score = 9-15

FUNCTION	Improving Water Quality			Hydrologic Habitat		at				
			Circle	the a	ppropi	riate ra	ntings	;		
Site Potential	Н	Μ	L	Н	Μ	L	Н	Μ	L	
Landscape Potential	Н	Μ	L	Н	Μ	L	Н	Μ	L	
Value	Η	Μ	L	Н	Μ	L	Н	Μ	L	TOTAL
Score Based on Ratings								4		6

Score for each function based on three ratings (order of ratings is not *important*) 9 = H, H, H8 = H, H, M7 = H, H, L7 = H, M, M6 = H, M, L6 = M, M, M5 = H,L,L5 = M, M, L4 = M, L, L3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CUADACTEDICTIC	CATECODY			
CHARACTERISTIC	CATEGORY			
	Circle the appropriate category			
Vernal Pools	II III			
Alkali	I			
Wetland of High Conservation Value	I			
Bog and Calcareous Fens	I			
Old Growth or Mature Forest – slow growing	I			
Aspen Forest	Ι			
Old Growth or Mature Forest – fast growing	II			
Floodplain forest	II			
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	
Hydroperiods (including area of open water for H 1.3)	D 1.4, H 1.2, H 1.3	
Location of outlet (can be added to map of hydroperiods)	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland (can be added to another figure)	D 2.2, D 5.2	
Map of the contributing basin	D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including	H 2.1, H 2.2, H 2.3	
polygons for accessible habitat and undisturbed habitat		
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	А
Hydroperiods	H 1.2, H 1.3	А
Ponded depressions	R 1.1	A
Boundary of area within 150 ft of the wetland (can be added to another figure)	R 2.4	А
Map of the contributing basin	R 2.2, R 2.3, R 5.2	С
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	A
Width of wetland vs. width of stream (can be added to another figure)	R 4.1	A
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	В
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	С
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	R 3.2, R 3.3	D

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 (can be added to another figure)	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	Н 1.1, Н 1.5	
Hydroperiods	Н 1.2, Н 1.3	
Plant cover of dense trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of dense, rigid trees, shrubs, and herbaceous plants (can be added to figure above)	S 4.1	
Boundary of area within 150 ft of the wetland (can be added to another figure)	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)

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

NO - go to 2

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.

Wetland Rating System for Eastern WA: 2014 Update Rating Form – Effective January 1, 2015 Wetland name or number <u>B</u>

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 wetland 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	Depressional
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.

<u>RIVERINE WETLANDS</u> Water Quality Functions - Indicators that the site functions to improve water	r quality	Points (only 1 score per box)
R 1.0. Does the site have the potential to improve water quality?		
R 1.1. Area of surface depressions within the Riverine wetland that can trap sediments during	a flooding event:	
Depressions cover $>^{1}/_{3}$ area of wetland	points = 6	
Depressions cover $> \frac{1}{10}$ area of wetland	points = 3	1
Depressions present but cover $< \frac{1}{10}$ area of wetland	points = 1	
No depressions present	points = 0	
R 1.2. Structure of plants in the wetland (areas with >90% cover at person height; not Coward	lin classes):	
Forest or shrub $> 2/3$ the area of the wetland	points = 10	
Forest or shrub $\frac{1}{3} - \frac{2}{3}$ area of the wetland	points = 5	
Ungrazed, herbaceous plants $> 2/3$ area of wetland	points = 5	5
Ungrazed herbaceous plants $\frac{1}{3} - \frac{2}{3}$ area of wetland	points = 2	
Forest, shrub, and ungrazed herbaceous $< \frac{1}{3}$ area of wetland	points = 0	
Total for R 1Add the points	s in the boxes above	6

Rating of Site Potential If score is: ____12-16 = H X___6-11 = M ____0-5 = L

Record the rating on the first page

R 2.0. Does the landscape have the potential to support the water quality function of the site?		
R 2.1. Is the wetland within an incorporated city or within its UGA?	Yes = 2 No = 0	
R 2.2. Does the contributing basin include a UGA or incorporated area?	Yes = 1 No = 0	
R 2.3. Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that within the last 5 years?	have been clearcut Yes = 1 No = 0	1
R 2.4. Is > 10% of the area within 150 ft of wetland in land uses that generate pollutants	Yes = 1 No = 0	1
R 2.5. Are there other sources of pollutants coming into the wetland that are not listed in que	stions	
R 2.1-R 2.4? Source	Yes = 1 No = 0	
Total for R 2Add the points	in the boxes above	2
Rating of Landscape Potential If score is:3-6 = H χ _1 or 2 = M0 = L	Record the rating on t	he first page

R 3.0. Is the water quality improvement provided by the site valuable to soci	ety?	
R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributar mi?	y that drains to one within 1	
	Yes = 1 No = 0	1
R 3.2. Does the river or stream have TMDL limits for nutrients, toxics, or pathogens?	<mark>Yes = 1</mark> No = 0	1
R 3.3. Has the site been identified in a watershed or local plan as important for main YES if there is a TMDL for the drainage in which wetland is found.	taining water quality? Answer Yes = 2 No = 0	2
Total for R 3 Add	the points in the boxes above	4
Total for R 3 Add	the points in the boxes above	4

<u>Rating of Value</u> If score is: $X_2 - 4 = H$ ____1 = M ____0 = L

Record the rating on the first page

<u>RIVERINE WETLANDS</u> Hydrologic Functions - Indicators that site functions to reduce flooding and stream erosion	Points (only 1 score per box)
R 4.0. Does the site have the potential to reduce flooding and erosion?	
R 4.1. Characteristics of the overbank storage the wetland provides: Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of wetland)/(average width of stream between banks). If the ratio is more than 2 points = 10 If the ratio is 1-2 points = 8 If the ratio is ½-<1	4
R 4.2. Characteristics of plants that slow down water velocities during floods: <i>Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons need to have > 90% cover at person height. These are NOT Cowardin classes).</i> Forest or shrub for more than $^2/_3$ the area of the wetland points = 6 Forest or shrub for > $^1/_3$ area OR emergent plants > $^2/_3$ area points = 4 Forest or shrub for > $^1/_{10}$ area OR emergent plants > $^1/_3$ area points = 2 Plants do not meet above criteria points = 0	4
Total for R 5Add the points in the boxes above	8

R 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
R 5.1. Is the stream or river adjacent to the wetland downcut?	Yes = 0 No = 1	0
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	0
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	1
Total for R 5	Add the points in the boxes above	1
Rating of Landscape Potential If score is: 3 = H X 1 or 2 = M 0 = L	L Record the rating on the first page	

R 6.0. Are the hydrologic functions provided by the site valuable to society?		
R 6.1. Distance to the nearest areas downstream that have flooding problems? <i>Choose the the site.</i>	e description that best fits	
The sub-basin immediately down-gradient of site has surface flooding problems that	at result in damage to	
human or natural resources Surface flooding problems are in a basin farther down-gradient No flooding problems anywhere downstream	points = 2 points = 1 points = 0	0
R 6.2. Has the site been identified as important for flood storage or flood conveyance in a plan?	regional flood control Yes = 2 No = 0	0
Total for R 6Add the po	pints in the boxes above	0
Rating of Value If score is: 2-4 = H 1 = M 0 = L	Record the rating on t	he first page

These questions apply to wetlands of all HGM classes.	(only 1
HABITAT FUNCTIONS - Indicators that site functions to provide important habitat	score per box)
H 1.0. Does the wetland have the potential to provide habitat for many species?	
H 1.1. Structure of the plant community: Check the Cowardin vegetation classes present and categories of emergent plants. Size threshold for each category is >= ¼ ac or >= 10% of the wetland if wetland is < 2.5 ac. Aquatic bed Emergent plants 0-12 in (0-30 cm) high are the highest layer and have > 30% cover	0
Emergent plants >12-40 in (>30-100 cm) high are the highest layer with >30% cover Emergent plants > 40 in (> 100 cm) high are the highest layer with >30% cover Scrub-shrub (areas where shrubs have >30% cover) 4 or more checks: points = 3 Forested (areas where trees have >30% cover) 3 checks: points = 2 2 checks: points = 1 1 check: points = 0	
H 1.2. Is one of the vegetation types Aquatic Bed? Yes = 1 No = 0	0
 H 1.3. Surface water H 1.3.1. Does the wetland have areas of open water (without emergent or shrub plants) over at least ¼ ac O 10% of its area during the March to early June OR in August to the end of September? Answer YES for Lake Fringe wetlands. Yes = 3 points & go to H 1.4 No = go to H 1.3.2 H 1.3.2. Does the wetland have an intermittent or permanent, and unvegetated stream within its boundarie or along one side, over at least ¼ ac or 10% of its area? Answer yes only if H 1.3.1 is No. Yes = 3 No = 0 	s, 0
H 1.4. <u>Richness of plant species</u> Count the number of plant species in the wetland that cover at least 10 ft ² . Different patches of the same species can be combined to meet the size threshold. You do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Russian olive, Phragmites, Canadian thistle, yellow-flag iris, and saltcedar (Tamarisk) # of species Scoring: > 9 species: points = 2 4-9 species: points = 1 < 4 species: points = 0	0
H 1.5. Interspersion of habitats 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.	, Figure
None = 0 points Low = 1 point Moderate = 2 points All three diagrams in this row are Image: Comparison of the second	

Wetland name or number <u>B</u>

H 1.6. Special habitat features	
 Check the habitat features that are present in the wetland. The number of checks is the number of points. Loose rocks larger than 4 in OR large, downed, woody debris (> 4 in diameter) within the area of surface ponding or in stream. Cattails or bulrushes are present within the wetland. Standing snags (diameter at the bottom > 4 in) in the wetland or within 30 m (100 ft) of the edge. 	
 Emergent or shrub vegetation in areas that are permanently inundated/ponded. 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 Invasive species cover less than 20% in each stratum of vegetation (canopy, sub-canopy, shrubs, herbaceous, moss/ground cover) 	2
Total for H 1Add the points in the boxes above	2

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

H 2.0. Does the landscape have the potential to support habitat functions of the site?	
H 2.1. Accessible habitat (only area of habitat abutting wetland). If total accessible habitat is:	
Calculate: % undisturbed habitat <u>0</u> + [(% moderate and low intensity land uses)/2] <u>0</u> = <u>0</u> %	
> ¹ / ₃ (33.3%) of 1 km Polygon points = 3	0
20-33% of 1km Polygon points = 2	-
10-19% of 1km Polygon points = 1	
<10% of 1km Polygon points = 0	
H 2.2. Undisturbed habitat in 1 km Polygon around wetland.	
Calculate: % undisturbed habitat + [(% moderate and low intensity land uses)/2] = 0_%	
Undisturbed habitat > 50% of Polygon points = 3	0
Undisturbed habitat 10 - 50% and in 1-3 patches points = 2	
Undisturbed habitat 10 - 50% and > 3 patches points = 1	
Undisturbed habitat < 10% of Polygon points = 0	
H 2.3. Land use intensity in 1 km Polygon:	
> 50% of Polygon is high intensity land use points = (- 2)	-2
Does not meet criterion above points = 0	
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	0
reclamation areas, irrigation districts, or reservoirs Yes = 3 No = 0	
Total for H 2Add the points in the boxes above	-2
Rating of Landscape Potential If score is: $A_{2} = H$ $1_{3} = M$ $(1 = 1)$ Record the rating on the first page	

<u>Rating of Landscape Potential</u> If score is: _____4-9 = H ____1-3 = M ____<1 = L Record the rating on the first page

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? Choose the highest score	
that applies to the wetland being rated	
Site meets ANY of the following criteria: points = 2	
 It has 3 or more priority habitats within 100 m (see Appendix B) 	
— It provides habitat for Threatened or Endangered species (any plant or animal on state or federal lists)	
 It is mapped as a location for an individual WDFW species 	
 It is a Wetland of High Conservation Value as determined by the Department of Natural Resources 	
— 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	1
Site has 1 or 2 priority habitats within 100 m (see Appendix B) points = 1	1
Site does not meet any of the criteria above points = 0	

<u>Rating of Value</u> If score is: <u>2 = H</u> <u>1 = M</u> <u>0 = L</u> 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
Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.	
SC 1.0. Vernal pools	
Is the wetland less than 4000 ft ² , and does it meet at least two of the following criteria?	
 Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input. 	
— Wetland plants are typically present only in the spring; the summer vegetation is typically upland	
annuals. If you find perennial, obligate, wetland plants, the wetland is probably NOT a vernal pool.	
— The soil in the wetland is shallow [< 1 ft (30 cm)deep] and is underlain by an impermeable layer such as	
basalt or clay.	
— Surface water is present for less than 120 days during the wet season.	
Yes – Go to SC 1.1 No = Not a vernal pool SC 1.1. Is the vernal pool relatively undisturbed in February and March?	
Yes – Go to SC 1.2 No = Not a vernal pool with special characteristics	
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.)? Yes = Category II No = Category III No = Category III	Cat. II Cat. III
SC 2.0. Alkali wetlands	
Does the wetland meet one of the following criteria?	
— The wetland has a conductivity > 3.0 mS/cm.	
— 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).	
— 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.	
OR does the wetland unit meet two of the following three sub-criteria?	
 — Salt encrustations around more than 75% of the edge of the wetland 	
— More than ¾ of the plant cover consists of species listed on Table 4	
— 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. Yes = Category I No= Not an alkali wetland	Cat. I
SC 3.0. Wetlands of High Conservation Value (WHCV)	
SC 3.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High	
Conservation Value? Yes – Go to SC 3.2 No – Go to SC 3.3	
SC 3.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value?	
Yes = Category I No = Not a WHCV	Cat. I
SC 3.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland?	
http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf	
Yes – Contact WNHP/WDNR and go to SC 3.4 No = Not a WHCV	
SC 3.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and it is listed	
on their website? Yes = Category I No = Not a WHCV	1

SC 4.0 Bogs and Calcareous Fens	
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.	
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? See Appendix C for a field key to	
<i>identify organic soils.</i> Yes – Go to SC 4.3 No – Go to SC 4.2	
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? Yes – Go to SC 4.3 No = Is not a bog for rating	
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? Yes = Category I bog No – Go to SC 4.4	
NOTE: 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.	
SC 4.4. Is an area with peats or mucks forested (> 30% cover) with subalpine fir, western red cedar, western	
hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 5 provide more than 30% of the cover under the canopy?	Cat. I
Yes = Category I bog No – Go to SC 4.5	
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? Yes = Is a Calcareous Fen for purpose of rating No – Go to SC 4.6	
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:	
— Marl deposits [calcium carbonate (CaCO ₃) precipitate] occur on the soil surface or plant stems	Cat. I
— The pH of free water is \geq 6.8 AND electrical conductivity is \geq 200 uS/cm at multiple locations within the	
wetland Yes = Is a Category I calcareous fen No = Is not a calcareous fen	

 SC 5.0. Forested Wetlands Does the wetland have an area of forest rooted within its boundary that meets at least one of the following three criteria? (<i>Continue only if you have identified that a forested class is present in question H 1.1</i>) The wetland is within the 100 year floodplain of a river or stream Aspen (<i>Populus tremuloides</i>) represents at least 20% of the total cover of woody species 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) Yes – Go to SC 5.1 No = Not a forested wetland with special characteristics 	
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)? Yes = Category I No – Go to SC 5.2	Cat. I
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? Yes = Category I No – Go to SC 5.3	Cat. I
SC 5.3. Does the wetland have at least ¼ acre with a forest canopy where more than 50% of the tree species (by cover) are fast growing species (<i>see Table 7</i>)? Yes = Category II No – Go to SC 5.4	Cat. II
SC 5.4. Is the forested component of the wetland within the 100 year floodplain of a river or stream? Yes = Category II No = Not a forested wetland with special characteristics	Cat. II
Category of wetland based on Special Characteristics	
Choose the highest rating if wetland falls into several categories If you answered No for all types, enter "Not Applicable" on Summary Form	

Appendix B: WDFW Priority Habitats in Eastern Washington

<u>Priority habitats listed by WDFW</u> (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. <u>http://wdfw.wa.gov/publications/00165/wdfw00165.pdf</u> or access the list from here: <u>http://wdfw.wa.gov/conservation/phs/list/</u>)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland: *NOTE: This question is independent of the land use between the wetland 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: <u>Old-growth east of Cascade crest</u> 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. <u>Mature forests</u> 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 > 12 in (30 cm)in eastern 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.

Wetland Rating System for Eastern WA: 2014 Update Effective January 1, 2015 Appendix B This page left blank intentionally

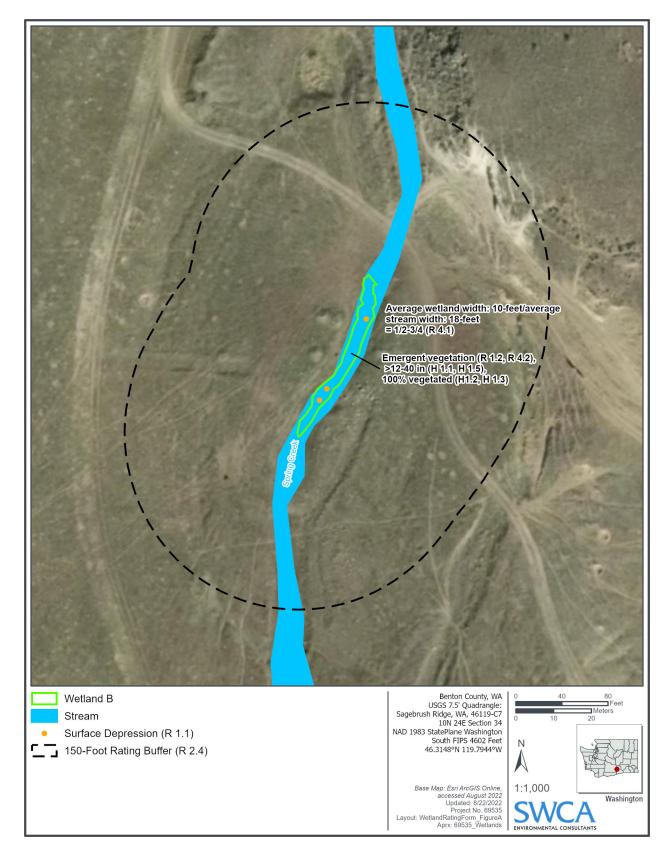


Figure A: Wetland B

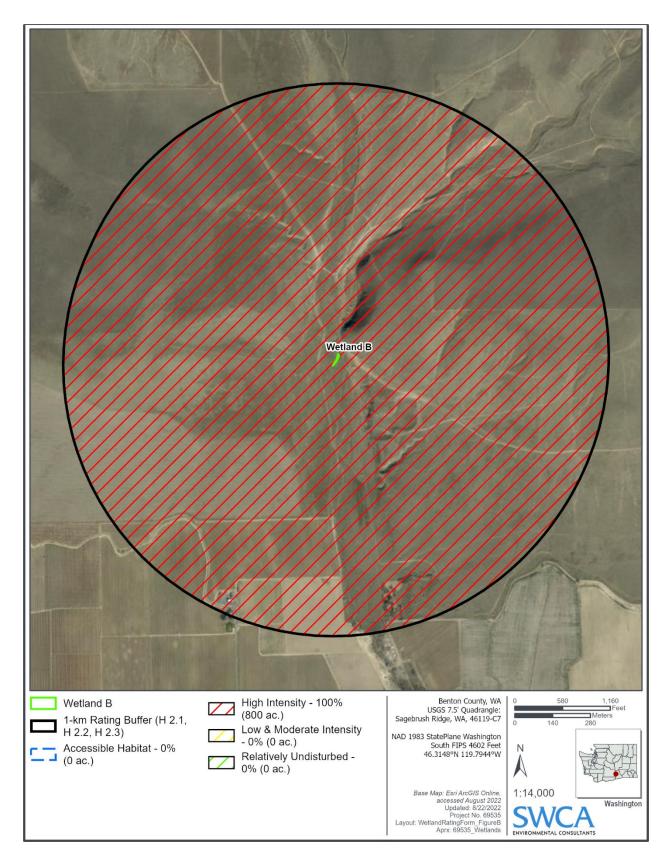


Figure B: Wetland B

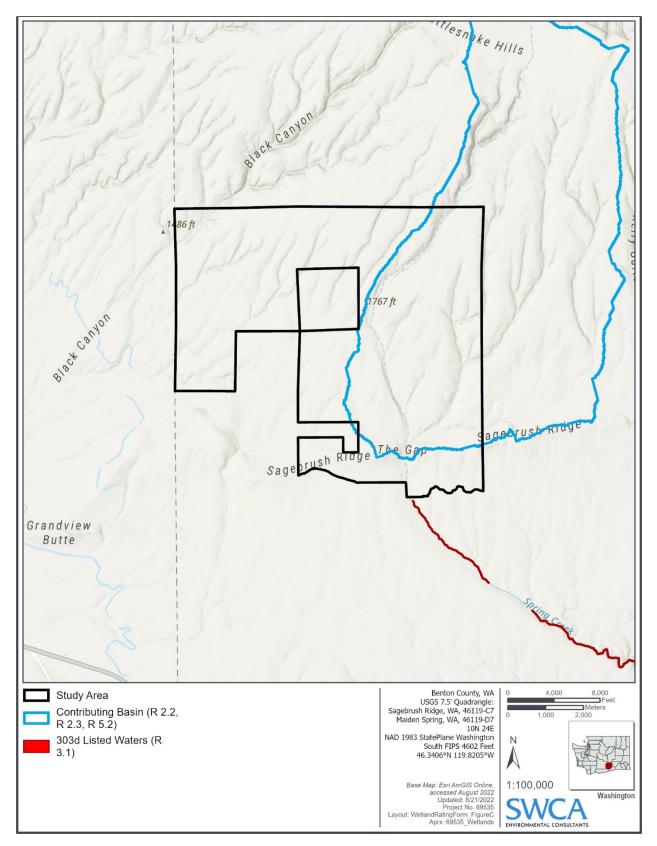


Figure C: Wetland B

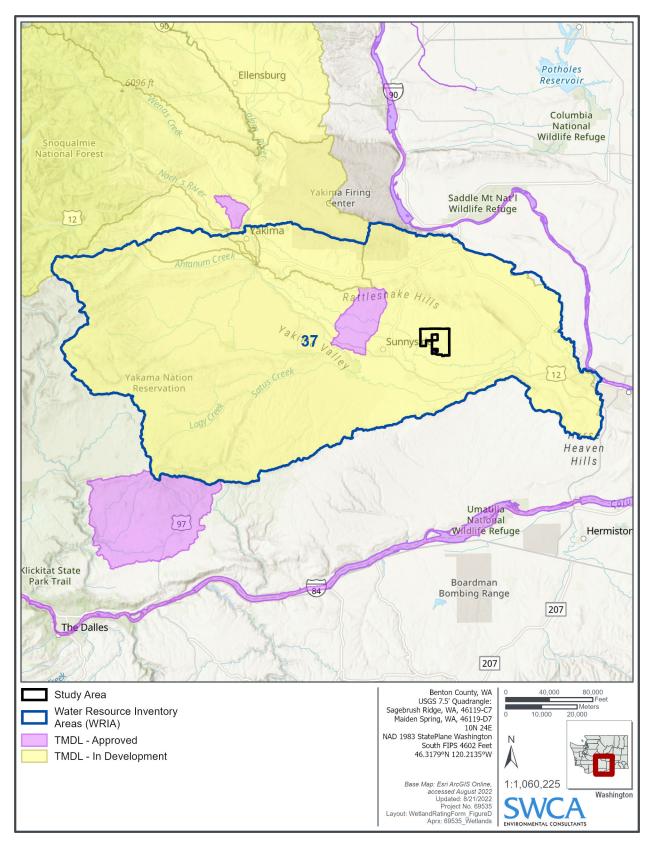


Figure D: Wetland B

RATING SUMMARY – Eastern Washington

Name of wetland (or ID #):Wetland CDate of site visit:6/30/2022Rated byJessalynn Spears & Chris MollerTrained by Ecology?XYesNo Date of training 10/09/18

HGM Class used for rating <u>Riverine</u> Wetland has multiple HGM classes? Y X N

NOTE: Form is not complete without the figures requested (figures can be combined). Source of base aerial photo/map _ESRI/Google Earth

OVERALL WETLAND CATEGORY _____ (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

____Category III – Total score = 16-18

X Category IV – Total score = 9-15

FUNCTION		mprov iter Q	/ing uality	H	ydrolo	ogic		Habita	ət	
			Circle	the a	ppropi	riate re	atings	5		
Site Potential	Н	Μ	L	Н	Μ	L	Н	М	L	
Landscape Potential	Н	Μ	L	Н	M	L	Н	М	L	
Value	Η	Μ	L	Н	Μ	L	Н	Μ	L	TOTAL
Score Based on Ratings		6			5			4		15

2. Category based on SPECIAL CHARACTERISTICS of wetland

	-
CHARACTERISTIC	CATEGORY Circle the appropriate category
Vernal Pools	II III
Alkali	Ι
Wetland of High Conservation Value	Ι
Bog and Calcareous Fens	Ι
Old Growth or Mature Forest – slow growing	I
Aspen Forest	Ι
Old Growth or Mature Forest – fast growing	II
Floodplain forest	II
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	
Hydroperiods (including area of open water for H 1.3)	D 1.4, H 1.2, H 1.3	
Location of outlet (can be added to map of hydroperiods)	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland (can be added to another figure)	D 2.2, D 5.2	
Map of the contributing basin	D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including	Н 2.1, Н 2.2, Н 2.3	
polygons for accessible habitat and undisturbed habitat		
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	А
Hydroperiods	H 1.2, H 1.3	А
Ponded depressions	R 1.1	A
Boundary of area within 150 ft of the wetland (can be added to another figure)	R 2.4	А
Map of the contributing basin	R 2.2, R 2.3, R 5.2	С
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	А
Width of wetland vs. width of stream (can be added to another figure)	R 4.1	А
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	В
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	С
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	R 3.2, R 3.3	D

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 (can be added to another figure)	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 dense trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of dense, rigid trees, shrubs, and herbaceous plants	S 4.1	
(can be added to figure above)		
Boundary of area within 150 ft of the wetland (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including	H 2.1, H 2.2, H 2.3	
polygons for accessible habitat and undisturbed habitat		
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)

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

NO - go to 2

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.

Wetland Rating System for Eastern WA: 2014 Update Rating Form – Effective January 1, 2015 **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 wetland 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	Depressional
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.

<u>RIVERINE WETLANDS</u> Water Quality Functions - Indicators that the site functions to improve w	ater quality	Points (only 1 score per box)
R 1.0. Does the site have the potential to improve water quality?		
R 1.1. Area of surface depressions within the Riverine wetland that can trap sediments du	uring a flooding event:	
Depressions cover $>^{1}/_{3}$ area of wetland	points = 6	
Depressions cover > $^{1}/_{10}$ area of wetland	points = 3	
Depressions present but cover $< \frac{1}{10}$ area of wetland	points = 1	0
No depressions present	points = 0	
R 1.2. Structure of plants in the wetland (areas with >90% cover at person height; not Cov	wardin classes):	
Forest or shrub $> 2/3$ the area of the wetland	points = 10	
Forest or shrub $\frac{1}{3} - \frac{2}{3}$ area of the wetland	points = 5	
Ungrazed, herbaceous plants $> {}^{2}/_{3}$ area of wetland	points = 5	
Ungrazed herbaceous plants $\frac{1}{3} - \frac{2}{3}$ area of wetland	points = 2	5
Forest, shrub, and ungrazed herbaceous $< 1/3$ area of wetland	points = 0	
Total for R 1 Add the p	oints in the boxes above	5

Rating of Site Potential If score is: 12-16 = H ____6-11 = M ____0-5 = L

Record the rating on the first page

R 2.0. Does the landscape have the potential to support the water quality function of the site?		
R 2.1. Is the wetland within an incorporated city or within its UGA?	Yes = 2 No = 0	0
R 2.2. Does the contributing basin include a UGA or incorporated area?	Yes = 1 No = 0	0
R 2.3. Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that within the last 5 years?	have been clearcut Yes = 1 No = 0	1
R 2.4. Is > 10% of the area within 150 ft of wetland in land uses that generate pollutants	Yes = 1 No = 0	1
R 2.5. Are there other sources of pollutants coming into the wetland that are not listed in que R 2.1-R 2.4? Source	estions Yes = 1 No = 0	0
Total for R 2Add the points	in the boxes above	2
Rating of Landscape Potential If score is: 3-6 = H 1 or 2 = M 0 = L	Record the rating on the	he first page

R 3.0. Is the water quality improvement provided by the site valuable to society?	
R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drains to one within 1 mi? Yes = 1 No = 0	
R 3.2. Does the river or stream have TMDL limits for nutrients, toxics, or pathogens? Yes = 1 No = 0	1
R 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 in which wetland is found.Yes = 2No = 0	2
Total for R 3Add the points in the boxes above	3
	the first is a

 Rating of Value
 If score is:
 2-4 = H
 1 = M
 0 = L

Record the rating on the first page

<u>RIVERINE WETLANDS</u> Hydrologic Functions - Indicators that site functions to reduce flooding and stream erosion	Points (only 1 score per box)
R 4.0. Does the site have the potential to reduce flooding and erosion?	
R 4.1. Characteristics of the overbank storage the wetland provides: Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of wetland)/(average width of stream between banks).	
If the ratio is more than 2points = 10If the ratio is 1-2points = 8	
If the ratio is $\frac{1}{2} < 1$ points = 4If the ratio is $\frac{1}{2} < \frac{1}{2}$ points = 2If the ratio is $< \frac{1}{4}$ points = 1	2
R 4.2. Characteristics of plants that slow down water velocities during floods: Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons need to have > 90% cover at person height. These are NOT Cowardin classes).	
Forest or shrub for more than $^{2}/_{3}$ the area of the wetlandpoints = 6Forest or shrub for > $^{1}/_{3}$ area OR emergent plants > $^{2}/_{3}$ areapoints = 4Forest or shrub for > $^{1}/_{10}$ area OR emergent plants > $^{1}/_{3}$ areapoints = 2	4
Plants do not meet above criteriapoints = 0Total for R 5Add the points in the boxes above	6

R 5.0. Does the landscape have the potential to support the hydrologic	functions of the site?	
R 5.1. Is the stream or river adjacent to the wetland downcut?	Yes = 0 No = 1	0
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	0
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	1
Total for R 5	Add the points in the boxes above	1
Rating of Landscape Potential If score is:3 = H1 or 2 = M0 = L	Record the rating on t	he first page

R 6.0. Are the hydrologic functions provided by the site valuable to society?		
R 6.1. Distance to the nearest areas downstream that have flooding problems? <i>Choose the site.</i> The sub-basin immediately down-gradient of site has surface flooding problem		
human or natural resources Surface flooding problems are in a basin farther down-gradient No flooding problems anywhere downstream	points = 2 points = 1 points = 0	0
R 6.2. Has the site been identified as important for flood storage or flood conveyance plan?	in a regional flood control Yes = 2 No = 0	0
Total for R 6 Add th	he points in the boxes above	0
Rating of Value If score is:2-4 = H1 = M0 = L	Record the rating on th	he first page

These questions apply to wetlands of all HGM classes.	(only 1
HABITAT FUNCTIONS - Indicators that site functions to provide important habitat	score per box)
H 1.0. Does the wetland have the potential to provide habitat for many species?	-
H 1.1. Structure of the plant community: Check the Cowardin vegetation classes present and categories of emergent plants. Size threshold for each category is >= ¼ ac or >= 10% of the wetland if wetland is < 2.5 ac. Aquatic bed	
Emergent plants 0-12 in (0-30 cm) high are the highest layer and have > 30% cover Emergent plants >12-40 in (>30-100 cm) high are the highest layer with >30% cover	
Emergent plants > 40 in (> 100 cm) high are the highest layer with >30% cover	
Scrub-shrub (areas where shrubs have >30% cover)4 or more checks: points = 3Forested (areas where trees have >30% cover)3 checks: points = 22 checks: points = 11 check: points = 0	0
H 1.2. Is one of the vegetation types Aquatic Bed? Yes = 1 No = 0	0
 H 1.3. Surface water H 1.3.1. Does the wetland have areas of open water (without emergent or shrub plants) over at least ¼ ac OR 10% of its area during the March to early June OR in August to the end of September? Answer YES for Lake Fringe wetlands. 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 ¼ ac or 10% of its area? Answer yes only if H 1.3.1 is No. Yes = 3 No = 0 	0
H 1.4. <u>Richness of plant species</u> Count the number of plant species in the wetland that cover at least 10 ft ² . Different patches of the same species can be combined to meet the size threshold. You do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Russian olive, Phragmites, Canadian thistle, yellow-flag iris, and saltcedar (Tamarisk) # of species Scoring: > 9 species: points = 2 4-9 species: points = 1 < 4 species: points = 0	0
H 1.5. Interspersion of habitats 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.	Figure
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.	
None = 0 pointsLow = 1 pointModerate = 2 points	0
All three diagrams in this row are High = 3 points	U U

Wetland name or number_C____

H 1.6. Special habitat features	
Check the habitat features that are present in the wetland. The number of checks is the number of points.	
Loose rocks larger than 4 in OR large, downed, woody debris (> 4 in diameter) within the area of surface	
ponding or in stream.	
Cattails or bulrushes are present within the wetland.	0
Standing snags (diameter at the bottom > 4 in) in the wetland or within 30 m (100 ft) of the edge.	
Emergent or shrub vegetation in areas that are permanently inundated/ponded.	
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	
Invasive species cover less than 20% in each stratum of vegetation (canopy, sub-canopy, shrubs,	
herbaceous, moss/ground cover)	
Total for H 1Add the points in the boxes above	0
Rating of Site Potential If score is: 15-18 = H 7-14 = M 6-6 = L 7-14 = M 7-14 = M 7-14 = M 7-14 = L Record the rating on the first page	

H 2.0. Does the landscape have the potential to support habitat functions of the site?	
H 2.1. Accessible habitat (only area of habitat abutting wetland). If total accessible habitat is:	
<i>Calculate:</i> % undisturbed habitat <u>0</u> + [(% moderate and low intensity land uses)/2] <u>0</u> = <u>0</u> %	
> ¹ / ₃ (33.3%) of 1 km Polygon points = 3	
20-33% of 1km Polygon points = 2	0
10-19% of 1km Polygon points = 1	
<10% of 1km Polygon points = 0	
H 2.2. Undisturbed habitat in 1 km Polygon around wetland.	
<i>Calculate:</i> % undisturbed habitat + [(% moderate and low intensity land uses)/2] <u>45</u> = <u>45</u> %	
Undisturbed habitat > 50% of Polygon points = 3	
Undisturbed habitat 10 - 50% and in 1-3 patches points = 2	0
Undisturbed habitat 10 - 50% and > 3 patches points = 1	
Undisturbed habitat < 10% of Polygon points = 0	
H 2.3. Land use intensity in 1 km Polygon:	
> 50% of Polygon is high intensity land use points = (- 2)	-2
Does not meet criterion above points = 0	
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 Yes = 3 No = 0	0
Total for H 2 Add the points in the boxes above	-2
	-

<u>Rating of Landscape Potential</u> If score is: _____4-9 = H ____1-3 = M ____<1 = L Record the rating on the first page

.1. Does the site provide habitat for species valued in laws, regulations, or policie	s? Choose the highest score	
that applies to the wetland being rated		
Site meets ANY of the following criteria:	points = 2	
 It has 3 or more priority habitats within 100 m (see Appendix B) 		
 It provides habitat for Threatened or Endangered species (any plant or an 	imal on state or federal lists)	
 It is mapped as a location for an individual WDFW species 		1
 It is a Wetland of High Conservation Value as determined by the Departm 	ent of Natural Resources	
- It has been categorized as an important habitat site in a local or regional of	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	

<u>Rating of Value</u> If score is: <u>2 = H</u> <u>1 = M</u> <u>0 = L</u> 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
Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.	
SC 1.0. Vernal pools	
Is the wetland less than 4000 ft ² , and does it meet at least two of the following criteria?	
 Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input. 	
 Wetland plants are typically present only in the spring; the summer vegetation is typically upland 	
annuals. If you find perennial, obligate, wetland plants, the wetland is probably NOT a vernal pool.	
— The soil in the wetland is shallow [< 1 ft (30 cm)deep] and is underlain by an impermeable layer such as	
basalt or clay.	
— Surface water is present for less than 120 days during the wet season.	
Yes – Go to SC 1.1 No = Not a vernal pool	
SC 1.1. Is the vernal pool relatively undisturbed in February and March? Yes – Go to SC 1.2 No = Not a vernal pool with special characteristics	
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.)? Yes = Category II No = Category III	Cat. II Cat. III
SC 2.0. Alkali wetlands	
Does the wetland meet one of the following criteria?	
— The wetland has a conductivity > 3.0 mS/cm.	
— 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).	
— 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.	
OR does the wetland unit meet two of the following three sub-criteria?	
 — Salt encrustations around more than 75% of the edge of the wetland 	
— More than ¾ of the plant cover consists of species listed on Table 4	
 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. Yes = Category I No= Not an alkali wetland 	Cat. I
SC 3.0. Wetlands of High Conservation Value (WHCV)	
SC 3.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to SC 3.2 No – Go to SC 3.3	
SC 3.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value?	
Yes = Category I No = Not a WHCV	Cat. I
SC 3.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland?	
http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf	
Yes – Contact WNHP/WDNR and go to SC 3.4 No = Not a WHCV	
SC 3.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and it is listed	
on their website? Yes = Category I No =Not a WHCV	

SC 4.0 Bogs and Calcareous Fens	
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.	
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? See Appendix C for a field key to	
<i>identify organic soils.</i> Yes – Go to SC 4.3 No – Go to SC 4.2	
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? Yes – Go to SC 4.3 No = Is not a bog for rating	
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? Yes = Category I bog No – Go to SC 4.4	
NOTE: 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.	
SC 4.4. Is an area with peats or mucks forested (> 30% cover) with subalpine fir, western red cedar, western	
hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 5 provide more than 30% of the cover under the canopy?	Cat. I
Yes = Category I bog No – Go to SC 4.5	
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? Yes = Is a Calcareous Fen for purpose of rating No – Go to SC 4.6	
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:	
— Marl deposits [calcium carbonate (CaCO $_3$) precipitate] occur on the soil surface or plant stems	Cat. I
— The pH of free water is ≥ 6.8 AND electrical conductivity is ≥ 200 uS/cm at multiple locations within the	
wetland Yes = Is a Category I calcareous fen No = Is not a calcareous fen	

 SC 5.0. Forested Wetlands Does the wetland have an area of forest rooted within its boundary that meets at least one of the following three criteria? (<i>Continue only if you have identified that a forested class is present in question H 1.1</i>) — The wetland is within the 100 year floodplain of a river or stream — Aspen (<i>Populus tremuloides</i>) represents at least 20% of the total cover of woody species — 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) Yes – Go to SC 5.1 No = Not a forested wetland with special characteristics	
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)? Yes = Category I No – Go to SC 5.2	Cat. I
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? Yes = Category I No – Go to SC 5.3	Cat. I
SC 5.3. Does the wetland have at least ¼ acre with a forest canopy where more than 50% of the tree species (by cover) are fast growing species (<i>see Table 7</i>)? Yes = Category II No – Go to SC 5.4	Cat. II
SC 5.4. Is the forested component of the wetland within the 100 year floodplain of a river or stream? Yes = Category II No = Not a forested wetland with special characteristics	Cat. II
Category of wetland based on Special Characteristics Choose the highest rating if wetland falls into several categories	
If you answered No for all types, enter "Not Applicable" on Summary Form	

Appendix B: WDFW Priority Habitats in Eastern Washington

<u>Priority habitats listed by WDFW</u> (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. <u>http://wdfw.wa.gov/publications/00165/wdfw00165.pdf</u> or access the list from here: <u>http://wdfw.wa.gov/conservation/phs/list/</u>)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland: *NOTE: This question is independent of the land use between the wetland 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: <u>Old-growth east of Cascade crest</u> 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. <u>Mature forests</u> 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 > 12 in (30 cm)in eastern 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.

Wetland Rating System for Eastern WA: 2014 Update Effective January 1, 2015 Appendix B This page left blank intentionally

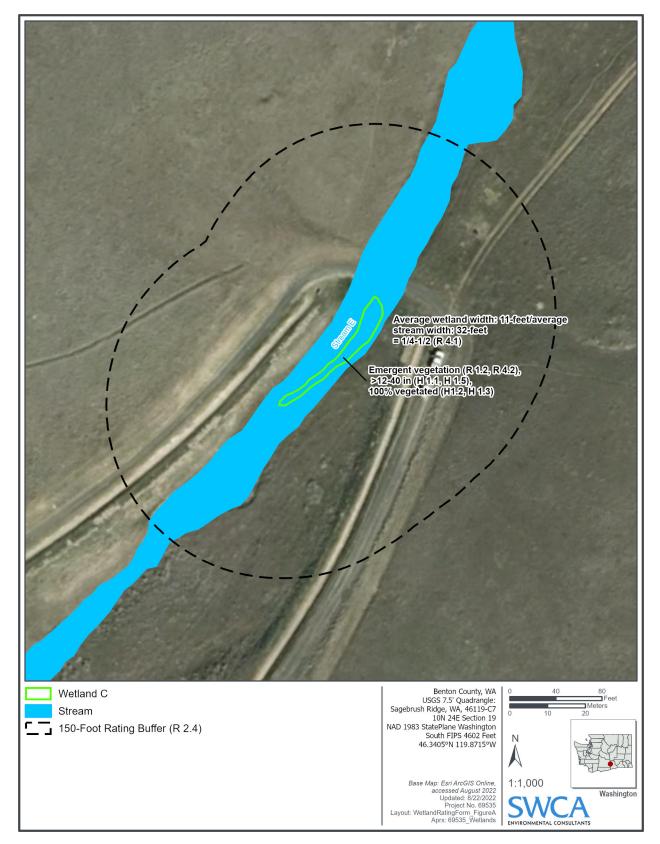


Figure A: Wetland C

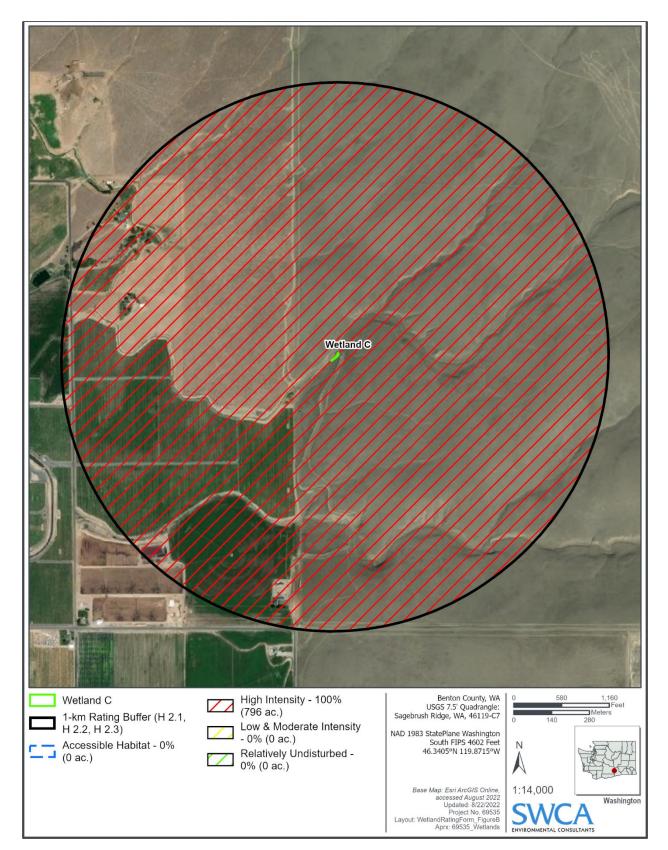


Figure B: Wetland C

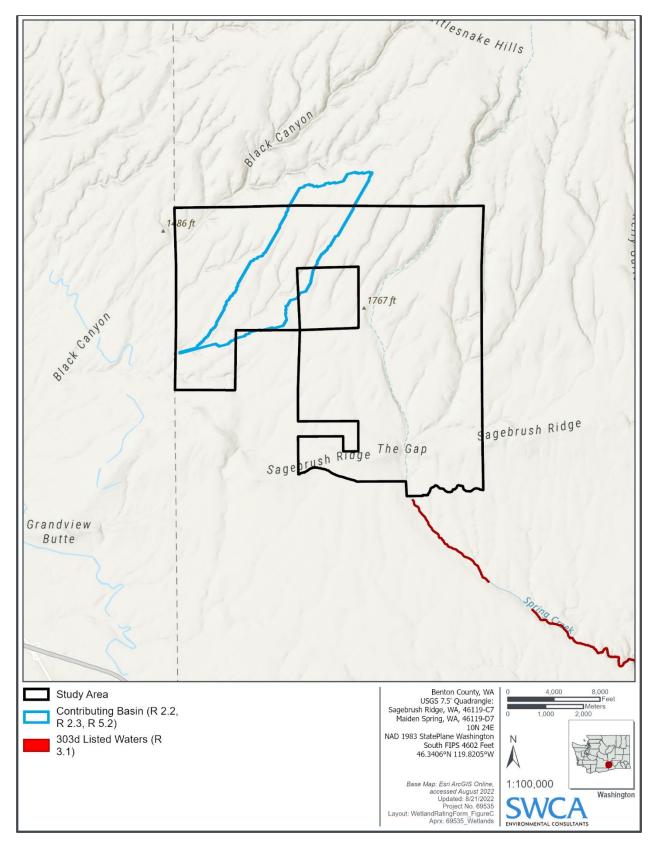


Figure C: Wetland C

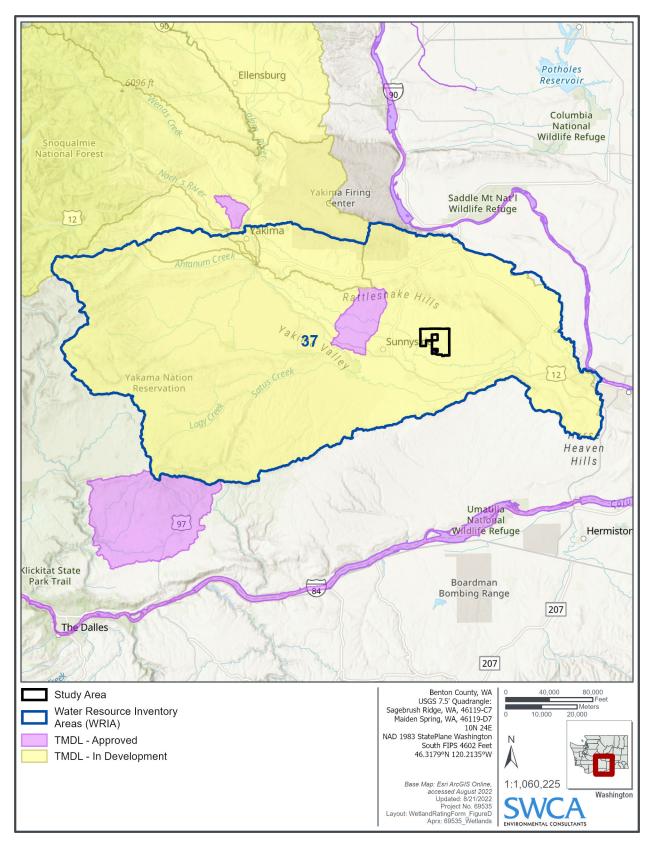


Figure D: Wetland C

Appendix D

Precipitation Data

		I for the Pre OSSER WA		nth Period (An	tecedent R	ainfall)				Period -2020
leasu	red Rainfall		A 2021-2022	Water Year					Since Oct. 1st	Since Jan. 1st
			fall Percentile	Measured	Condition	Condition Value	Month	Multiply	Departure	Departure
	Prior Month	30th	70th	Rainfall	Dry, Wet,	(1=dry, 2=normal,	Weight	previous	from Normal*	from Normal*
Most	Recent First	inch	1es	inches	Normal	3=wet)		2 columns	0.66	0.37
1st	June	0.29	0.71	1.22	Wet	3	3	9	WYTD*	CYTD*
2nd	Мау	0.40	0.89	1.70	Wet	3	2	6	8.75	5.50
3rd	April	0.27	0.76	1.40	Wet	3	1	3	Normal	Normal
				4.32					8.09	5.13
					Normals				*As of Date:	7/1/2022
	Jan-22	0.68	1.32	0.48	1.24					
	Feb-22	0.46	1.01	0.07	0.90					
	Mar-22	0.39	0.77	0.63	0.69					
	Apr-22	0.27	0.76	1.40	0.74					
	May-22	0.40	0.89	1.70	0.88					
	Jun-22	0.29	0.71	1.22	0.68					
	Jul-21	0.00	0.23	0.00	0.21					
	Aug-21	0.08	0.20	0.04	0.16					
	Sep-21	0.12	0.29	0.76	0.27					
	Oct-21	0.37	0.95	0.81	0.77					
	Nov-21	0.53	1.07	1.57	0.86					
	Dec-21	0.72	1.56	0.87	1.33					
	Totals:	4.31	9.76	9.55	8.73		Sum	18		
	l of prior peri s 15-18)	od was: drie	r than normal	(sum is 6-9), n	ormal (sum	is 10-14), wetter tha	an normal	Wetter than Normal		

WETS Table (based on climate period 1991-2020) and Measured Rainfall source: <u>http://agacis.rcc-acis.org/</u> Normals are calculated based on climate period 1991-2020.

WETS Station: PROSSER, WA

Requested years: 1991 -2020

Month	Avg Max	Avg Min	Avg	Avg	30%	30%	Avg number	Avg	
	Temp	Temp	Mean Temp	Precip	chance precip less	chance precip	days precip 0.10 or more	Snowfall	
					than	more than			
Jan	40.1	26.8	33.5	1.24	0.68	1.32	4	-	
Feb	46.7	28.6	37.7	0.90	0.46	1.01	3	-	
Mar	55.9	34.9	45.4	0.69	0.39	0.77	3	-	
Apr	64.6	39.9	52.3	0.74	0.27	0.76	2	-	
Мау	74.1	47.9	61.0	0.88	0.40	0.89	2	-	
Jun	80.9	53.6	67.3	0.68	0.29	0.71	2	-	
Jul	90.4	59.5	75.0	0.21	0.00	0.23	1	-	
Aug	89.2	57.7	73.5	0.16	0.08	0.20	1	-	
Sep	79.7	50.1	64.9	0.27	0.12	0.29	1	-	
Oct	64.7	40.8	52.8	0.77	0.37	0.95	2	-	
Nov	49.3	31.7	40.5	0.86	0.53	1.07	3	-	
Dec	39.5	26.3	32.9	1.33	0.72	1.56	4	-	
Annual:					-	-			
Average	64.6	41.5	53.0	-	-	-	-	-	
Total	-	-	-	8.73			28	-	

GROWING SEASON DATES

Years with missing data:	24 deg = 12	28 deg = 12	32 deg = 8
Years with no occurrence:	24 deg = 0	28 deg = 0	32 deg = 0
Data years used:	24 deg = 18	28 deg = 18	32 deg = 22
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	Insufficient data	Insufficient data	4/19 to 10/21: 185 days
70 percent *	Insufficient data	Insufficient data	4/8 to 11/1: 207 days

* Percent chance of the growing season occurring between the Beginning and Ending dates.

LIIUIII	y ua	les.	

STATS TABLE - total precipitation (inches)													
,													
Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1925							0.00						0.00
1926		M0.60	0.10	0.22	0.75	0.86		0.10	0. 38	M0. 88	M3. 64	1. 50	9.03
1927	M1.08	1.07	0.60	0.05	0.69	0.23	0.01	0.35	1. 54	1. 08	1.51	0. 23	8.44
1928		0.10	0.87	M0.81	0.05	0.58			M0. 27	0. 36	M1. 10	1. 73	5.87
1929	1.10	M0.10	0.11		0.21	M0.67	0.00	0.01	M0. 04	M0. 17	0.03	1. 74	4.18
1930	0.83	0.96	0.20	0.22	0.36	0.00	0.00	0.04	M0. 03	0. 10	0.35	0. 21	3.30
1931	0.50	0.20	1.17	0.43	0.01	0.80	0.00	0.00	M0. 17	0. 51	1.51	3. 02	8.32
1932	M0.48	0.37	0.75	0.39	0.62	0.00	0.05	0.10	0. 00	0. 94	1.00	0. 43	5.13
1933	0.60	0.62	0.97	0.35	1.15	0.42	0.07	0.17	0.	0.	0.32	1.	7.36

									98	47		24	
1934	0.64	0.28	0.75	0.43	0.44	0.21	0.00	0.61	0. 52	1. 17	1.02	0. 57	6.64
1935	0.14	0.53	0.02	0.38	0.07	0.28	0.34	Т	0. 05	0. 90	0.40	1. 13	4.24
1936	1.73	0.68	0.16	0.31	0.32	0.78	0.06	0.00	0. 10	0. 03	0.02	1. 08	5.27
1937	0.88	0.90	M0.63	0.99	0.04	1.46	0.39	0.21	0. 34	0. 82	2.09	2. 03	10. 78
1938	0.80	0.73	1.05	0.30	0.22	1.64	0.00	0.02	0. 03	0. 92	0.46	0. 39	6.56
1939	0.88	0.65	0.56	0.04	0.08	0.17	M0.16	0.00	0. 66	0. 31	Т	1. 14	4.65
1940	1.20	3.18	0.59	0.52	0.15	0.19	0.61	0.00	0. 69	2. 12	1.58	1. 53	12. 36
1941	1.61	0.87	0.28	0.38	1.11	1.74	0.30	0.78	0. 66	0. 80	0.95	0. 60	10. 08
1942	1.11	0.85	0.09	0.33	1.65	1.37	0.02	0.06	т	0. 75	1.80	1. 62	9.65
1943	0.41	0.73	0.50	1.08	0.25	0.22	0.00	0.25	0. 00	1. 58	0.31	0. 41	5.74
1944	0.30	0.40	0.39	1.70	0.27	0.58	0.00	Т	0. 26	0. 19	1.62	1. 03	6.74
1945	0.98	1.24	0.79	0.48	1.74	0.06	0.03	0.05	0. 48	0. 70	0.82	1. 55	8.92
1946	0.20	0.44	1.33	0.34	0.55	1.01	0.25	0.32	0. 51	0. 92	0.98	0. 06	6.91
1947	M0.06	0.64	0.32	0.84	0.07	1.36	0.57	0.95	0. 62	2. 50	0.77	0. 65	9.35
1948	1.44	0.76	0.07	0.89	1.41	1.54	0.32	0.25	0. 21	0. 77	0.95	1. 07	9.68
1949	0.15	0.90	1.18	0.10	0.27	0.01	MT	0.06	0. 70	0. 30	1.39	0. 05	5.11
1950	1.66	1.24	1.16	0.47	0.13	2.73	M0.02	0.03	0. 10	2. 73	0.81	1. 17	12. 25
1951	0.96	0.60	0.13	M0.36	0.57	1.19	0.16	0.31	0. 56	1. 29	M1. 12	0. 61	7.86
1952	0.66	0.51	0.41	0.42	0.52	0.91	т	0.07	0. 16	0. 03	0.23	M1. 00	4.92
1953	2.35	0.25	0.23	0.83	M0.63	0.28	0.00	M0.48	0. 00	0. 74	1.48	0. 83	8.10
1954	0.95	0.20	0.72	0.26	M0.39	0.14	0.43	0.04	0. 48	0. 58	0.99	0. 29	5.47
1955	0.31	0.17	0.24	0.81	0.23	0.21	M0.65	0.00	0. 77	0. 72	1.75	2. 41	8.27
1956	2.08	0.86	0.13	0.00	0.53	0.55	0.02	0.33	0. 06	1. 48	0.20	0. 69	6.93
1957	0.38	M0.40	1.89	0.54	1.03	1.90	0.10	0.02	0. 83	2. 57	0.62	0. 81	11. 09
1958	2.10	M1.63	0.72	1.45	0.75	0.28	0.38	0.07	0. 04	0. 25	1.06	1. 27	10. 00
1959	2.00	0.60	0.31	0.30	0.16	0.53	0.18	0.03	0. 90	0. 24	0.30	0. 36	5.91
1960	0.61	0.99	0.68	0.87	1.14	0.24	0.02	0.22	0. 32	0. 40	1.60	0. 69	7.78
1961	0.70	3.08	1.18	1.42	1.90	0.47	0.17	0.69	0. 19	0. 11	0.97	0. 91	11. 79
1962	0.16	0.79	0.55	0.47	2.06	M0.25	0.00	0.55	0. 46	1. 39	1.10	0. 96	8.74
1963	0.29	0.77	0.74	1.55	0.87	0.36	0.44	0.03	0. 08	0. 41	0.92	1. 32	7.78
1964		0.05	0.16	0.10	Т	1.54	0.07	0.25	0. 03	0. 37	1.16	3. 46	7.19
1965	1.04	0.01	0.10	0.41	0.28	0.57	0.06	0.25	0. 09	0. 06	1.35	0. 54	4.76
1966	0.56	0.06	0.45	0.06	0.12	0.70	1.16	0.02	0. 23	0. 42	2.16	1. 10	7.04
1967	0.73	Т	0.29	1.07	0.31	0.79	0.00	0.00	0.	0.	0.51	0.	4.37

									14	29		24	
1968	0.93	0.75	0.05	0.09	0.20	0.45	0.03	0.74	0. 40	1. 41	1.73	0. 91	7.69
1969	1.57	0.68	0.25	0.95	0.94	0.23	Т	0.00	0. 57	0. 14	0.32	1. 59	7.24
1970	2.94	1.16	0.21	0.36	0.26	0.15	0.09	0.00	0. 15	0. 48	1.03	0. 65	7.48
1971	0.94	0.12	1.35	0.27	0.36	1.32	0.20	0.20	1. 19	0. 29	0.72	1. 25	8.21
1972	0.11	0.08	1.07	0.12	2.29	1.52	0.27	0.16	0. 24	0. 21	0.45	1. 46	7.98
1973	0.84	0.32	0.23	0.06	0.45	0.13	0.00	0.02	0.	1.	2.74	2.	9.69
1974	0.66	0.54	0.62	1.44	0.42	0.20	0.75	0.00	56 0.	59 0.	1.03	75 1.	7.09
1975	1.44	1.04	0.36	0.93	0.20	0.06	0.40	1.13	01 0.	22 1.	0.70	20 1.	8.54
1976	0.65	0.13	0.18	0.63	0.29	0.01	0.43	0.79	00 0.	15 0.	Т	13 0.	3.48
1977	0.11	0.64	0.48	0.02	0.69	0.27	0.11	1.53	04 0.	16 0.	0.62	17 2.	7.69
1978	2.25	0.80	0.33	0.88	0.63	0.14	0.71	1.10	74 0.	11 0.	0.54	37 0.	7.83
1979	0.95	0.23	0.40	0.55	0.16	Т	0.27	0.68	22 0.	00	1.45	23 0.	7.37
1979						0.84			26	71		71	
	M1.56	1.39	0.49	0.84	1.49		0.02	0.00	1. 04	0. 47	0.60	2. 19	10. 93
1981	0.49	0.70	0.31	0.10	0.99	0.79	0.15	0.05	0. 72	0. 62	0.99	1. 90	7.81
1982	M0.49	0.22	0.68	1.33	0.36	1.61	0.04	0.42	1. 33	2. 05	0.66	1. 49	10. 68
1983	M1.47	1.52	1.08	0.81	0.66	0.74	0.69	0.67	0. 34	0. 96	2.44	M1. 96	13. 34
1984	0.11	0.86	1.03		0.79	0.83	Т	0.02	0. 90	0. 12	2.20	0. 59	7.45
1985	0.39	0.65	0.55	0.10	0.61	0.50	Т	0.27	0. 99	0. 51	0.75	0. 74	6.06
1986	1.85	1.05	1.07	0.19				0.07	1. 81	0. 62	0.63	1. 32	8.61
1987	0.80		1.53	0.39	M0.19	0.62	0.06	0.04	0. 12	0. 00	0.55	2. 06	6.36
1988	1.07	0.00	0.63	1.18	0.53	0.55	0.15	0.00	0.	0.	1.59	0.	6.68
1989	0.35	0.58	1.78		0.55	0.06	0.05	0.99	54	04 0.	0.77	40 0.	6.34
1990	0.89	0.38	0.23	0.62	0.80	0.59	0.04	1.11	0.	71	0.07	50 0.	5.33
1991	0.44	0.96	M0.56	0.33	0.81	1.25	0.24	0.05	00 0.	0.	2.00	60 0.	8.09
1992				2.19	0.02	1.18	0.48	0.42	00 0.	61 0.	1.33	84 0.	7.39
1993	1.23	0.66		0.88	0.38	0.54	0.32	0.12	30 0.	64 0.	0.19	83 0.	5.27
1994	1.01	0.86	0.13		1.08	0.74	0.37	0.13	00	05		90	4.32
1995	1.01	0.00	0.10		0.41	0.14	0.01	0.10					0.41
1996									0. 29	1. 35	1.16	M1. 92	4.72
1997	1.73	M0.56	M1.36	0.83	0.28	0.49	0.52	M0.18	0. 86	M0. 80	0.80	0. 50	8.91
1998	1.45	1.04		0.33	1.26	0.23	0.55	0.27		0. 10	1.55	1. 19	7.97
1999	0.93	1.64	0.17	0.00	0.41	0.10	0.03	0.12	0. 00	0. 71	0.71	1. 28	6.10
2000	M0.80	1.59	1.12	0.03	1.21	0.84	0.00	0.00	0. 51	0. 42	1.28	0. 27	8.07
2001	M0.53	M0.16	0.81	0.79	0.43	0.60	0.15	0.15	0.	0.	1.75	1.	7.33
2002	0.56	0.83	0.30	0.02	0.76	0.67	0.19	0.00	08 0.	61 0.	0.43	27 2.	6.74

									05	10		83	
2003	2.06	1.25	0.66	1.17	0.16	0.00	0.00	0.58	0. 16	0. 20	0.63	1. 97	8.84
2004	2.43	1.34	0.32	0.25	1.02	1.54	0.06	1.40	0. 27	0. 88	0.17	0. 99	10. 67
2005	0.84	M0.00	0.91	0.75	0.73	M0.21	0.42	0.05	0. 00	1. 21	1.45	2. 80	9.37
2006	2.16	0.53	0.78	1.11	0.62	1.63	0.00	0.00	0. 15	0. 96	0.89	1. 96	10. 79
2007	0.52	0.80	1.16	0.68	0.36	0.16	0.11	0.35	0. 26	1. 10	M0. 88	M2. 38	8.76
2008	1.51	0.59	0.57	0.23	0.70	0.80	0.00		0. 15	0. 24	0.75		5.54
2009					0.66	0.15		0.06	0. 10	1. 58	0.42	0. 33	3.30
2010		0.97	0.15	0.71		1.53	0.29	0.00	1. 70	1. 00	M0. 87	2. 19	9.41
2011	M0.63	M0.16	M1.56	M0.34	M1.74	M0.20				M0. 69	M0. 21	M0. 18	5.71
2012	M0.50		M1.06				M0.24	M0.00	0. 00	1. 76	M1. 37	2. 06	6.99
2013	0.10	0.09	0.56		M1.33	1.58	0.00	0.12	M0. 89	M0. 27	0.37	M0. 12	5.43
2014	M0.00	0.98	0.66	0.69	0.41	0.30	0.20	0.31	0. 08	0. 46	0.33	1. 07	5.49
2015	0.53	0.66	0.50	0.12	1.95	0.00	0.00	M0.00	M0. 07	0. 23	M0. 85	M2. 46	7.37
2016	1.96	M0.55	0.98	M0.25	M0.50	0.35	0.38	M0.06	M0. 31	2. 74	0.71	0. 82	9.61
2017	M0.49	2.13	1.15	1.47	1.41	0.15	0.00	0.10	0. 61	1. 06	1.23	0. 42	10. 22
2018	1.42	M0.51	M0.39	1.23	M0.23	M0.17	M0.00	0.05	M0. 00	M1. 14	0.51	0. 83	6.48
2019	1.33	1.47	M0.29	M0.75	1.05	0.14	0.45	0.52	0. 25	0. 56	0.09	0. 55	7.45
2020	1.24	0.04	0.42	0.09	0.87	M0.33	0.00	Т	0. 00	0. 22	1.12	M0. 45	4.78
2021	0.83	M0.14	0.04	0.03	0.00	0.17	т	0.04	0. 76	0. 81	1.57	0. 87	5.26
2022	0.48	M0.07	0.63	1.40	1.70	M1.22	0.00	M0.00					5.50
s: Data missing in any th have an "M" flag. A ' indicates a trace of precipitation.													

Data missing for all days in a month or year is blank.

Creation date: 2022-08-19

AgACIS

2	0.04	0.03				Jun	Jul	Aug	Sep	Oct	Nov	Dec
		0.05	0.03	0.02	0.02	0.03	0.01	0.01	0.01	0.01	0.03	0.04
3	0.04	0.03	0.03	0.03	0.03	0.02	0.01	0.00	0.00	0.02	0.03	0.04
	0.05	0.04	0.03	0.02	0.03	0.03	0.01	0.01	0.01	0.01	0.03	0.03
4	0.04	0.03	0.02	0.03	0.02	0.03	0.01	0.00	0.01	0.02	0.02	0.04
5	0.05	0.03	0.03	0.02	0.03	0.02	0.01	0.00	0.01	0.02	0.03	0.04
6	0.04	0.04	0.02	0.03	0.03	0.03	0.01	0.01	0.01	0.01	0.03	0.04
7	0.05	0.03	0.03	0.03	0.03	0.03	0.00	0.00	0.01	0.02	0.03	0.04
8	0.05	0.03	0.02	0.02	0.03	0.02	0.01	0.01	0.00	0.02	0.02	0.04
9	0.04	0.03	0.03	0.03	0.03	0.03	0.01	0.00	0.01	0.02	0.03	0.03
10	0.05	0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.02	0.03	0.04
11	0.04	0.04	0.02	0.03	0.03	0.03	0.00	0.01	0.01	0.03	0.03	0.04
12	0.05	0.03	0.02	0.02	0.03	0.02	0.01	0.00	0.00	0.02	0.02	0.04
13	0.04	0.03	0.03	0.03	0.03	0.03	0.01	0.01	0.01	0.02	0.03	0.04
14	0.04	0.04	0.02	0.02	0.02	0.03	0.00	0.00	0.01	0.03	0.03	0.04
15	0.04	0.03	0.02	0.02	0.03	0.02	0.01	0.01	0.01	0.03	0.02	0.04
16	0.04	0.03	0.02	0.03	0.03	0.03	0.01	0.01	0.00	0.02	0.03	0.05
17	0.04	0.04	0.02	0.02	0.02	0.02	0.00	0.00	0.01	0.03	0.03	0.04
18	0.04	0.03	0.02	0.03	0.03	0.03	0.01	0.01	0.01	0.03	0.03	0.05
19	0.04	0.03	0.02	0.02	0.03	0.02	0.00	0.00	0.01	0.02	0.03	0.04
20	0.03	0.03	0.02	0.03	0.03	0.02	0.01	0.01	0.01	0.03	0.03	0.05
21	0.04	0.04	0.02	0.02	0.03	0.02	0.00	0.00	0.01	0.03	0.03	0.05
22	0.03	0.03	0.02	0.03	0.03	0.02	0.01	0.01	0.01	0.03	0.03	0.04
23	0.04	0.03	0.02	0.03	0.03	0.02	0.00	0.00	0.01	0.03	0.02	0.05
24	0.04	0.03	0.02	0.02	0.03	0.01	0.01	0.01	0.01	0.03	0.03	0.05
25	0.03	0.03	0.02	0.02	0.03	0.02	0.01	0.00	0.01	0.03	0.03	0.05
26	0.04	0.03	0.02	0.03	0.03	0.02	0.00	0.01	0.01	0.03	0.03	0.05
27	0.03	0.03	0.02	0.02	0.04	0.01	0.01	0.00	0.01	0.03	0.03	0.05
28	0.04	0.03	0.02	0.02	0.03	0.02	0.00	0.01	0.01	0.03	0.03	0.04
29	0.03	-	0.02	0.03	0.02	0.02	0.01	0.00	0.02	0.04	0.04	0.05
30	0.04	-	0.02	0.02	0.03	0.01	0.00	0.01	0.01	0.03	0.03	0.04
31	0.03	-	0.02	-	0.03	-	0.01	0.00	-	0.03	-	0.05