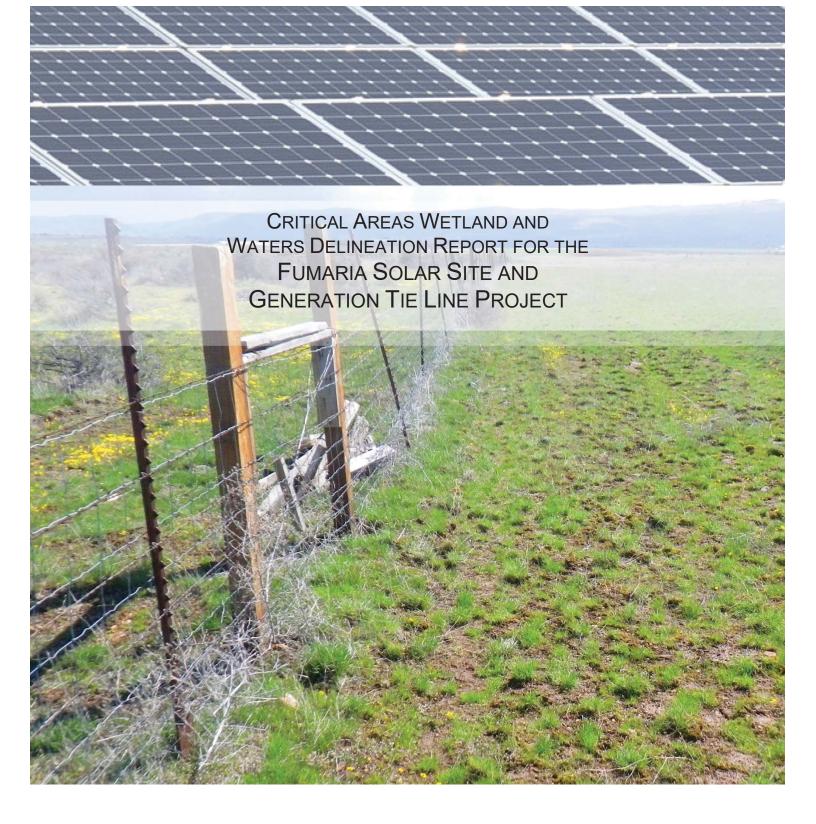
### Appendix H: Fumaria Solar Project Site Reports and Permit Applications

H-1: Fumaria Solar Project Critical Areas Report
H-2: Fumaria Solar Project Cultural Resources Report
H-3: Fumaria Solar Project Permit Applications

H-4: Fumaria Solar Project Geotechnical Engineering Study

H-5: Fumaria Solar Project Drainage Report

Appendix H-1: Fumaria Solar Pro	oject Critical Areas Report	



July 10, 2017

SWCA ENVIRONMENTAL CONSULTANTS
SEATTLE, WASHINGTON

## CRITICAL AREAS WETLAND AND WATERS DELINEATION REPORT FOR THE FUMARIA SOLAR SITE AND GENERATION TIE LINE PROJECT KITTITAS COUNTY, WASHINGTON

Sections 09, 16, 17, 20, 21, Township 18 North, Range 18 East Parcel Numbers 14031, 14032, 14033, 15472, 26033, 279433, 459433, 213936, 499433, 929433, 956498, 956502, 957539, 529433, 10583, 61436, 769433, 194736, 269433, and 629433

Report Prepared for

TUUSSO Energy, LLC

By Evan Dulin

July 10, 2017

Project Number 38727.05

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### 1 INTRODUCTION

This report describes the methods and findings of wetland, stream, and other critical areas delineation for the proposed Fumaria Solar Site and Generation Tie Line Project (Fumaria Solar Project). The report was prepared by SWCA Environmental Consultants (SWCA), and is intended to address permitting requirements under Energy Facility Site Evaluation Council (EFSEC) Washington Administrative Code (WAC) 463-60-322, -332, and -333, and to show compliance of the proposed project with Kittitas County's Code for Critical Areas Ordinance (KCC Chapter 17A).

### 1.1 Background

TUUSSO Energy, LLC (TUUSSO) is proposing to construct a new photovoltaic solar facility installation on approximately 41.6 acres of fallow pastoral land, including the construction of a switchyard with a short (2.6-mile-long, 25.4-acre) generation tie line into an existing Puget Sound Energy (PSE) substation or the existing PSE distribution transmission line adjacent to the substation, located northwest of Ellensburg, Kittitas County, Washington. The Fumaria Solar Project is intended to provide up to 5 MW of solar energy to PSE for use within their service area.

### 1.2 Project Setting

The Fumaria Solar Project site primarily consists of fallow pastoral land located northwest of Ellensburg, in unincorporated Kittitas County, Washington. The Fumaria Solar Project would be located approximately 1.5 miles northwest of the intersection of Hungry Junction Road and Reece Creek Road, in Sections 9, 16, 17, 20, and 21 of Township 18 North, Range 18 East, Willamette Meridian (Figure 1). The generation tie line would originate from the southwestern project site boundary corner and follow Clarke Road, along one of two proposed alignments, to Faust Road, where it would parallel Faust Road south along existing power poles on the east side of the road right-of-way (ROW) to Hungry Junction Road, where it would turn west and travel along the north side of the road ROW to U.S. Highway 97, where it would travel south along the west side of the road ROW down to just south of McManamy Road, where it would turn northwest to connect into the existing PSE substation (a total of 2.6 miles). There are two proposed alignments along Clarke Road, one that was surveyed during the site visits and that traverses the north side of the road and existing power poles (ROW A), and one that was not surveyed that traverses the south side of the road (ROW B).

The Fumaria Solar Project site is approximately 41.6 acres and the generation tie line is approximately 25.4 acres, totaling 67.0 acres for the overall project. Topography of the site generally slopes to the south toward the Kittitas Reclamation District (KRD) Canal. Surface elevation within the project area ranges from 1,750 to 1,600 feet above mean sea level, the lowest elevation being along the southern portion of the proposed distribution route near the existing PSE substation and the highest elevation being at the northern end of the solar site.

### 2 METHODS

### 2.1 Study Area

The Fumaria Solar Project site is approximately 41.6 acres and the generation tie line is approximately 25.4 acres, totaling 67.0 acres for the overall project. The generation tie line portion of the project is 80 feet wide centered on the existing power poles and the new proposed line connecting the solar site to the existing poles (Figure 1). Wetlands and streams outside of the project site and generation tie line but that occur within 200 feet of these boundaries and had the potential to have buffers extend into the project were included in the study area. Wetlands and streams outside of the project site and within the study area were visually inspected but not formally delineated.

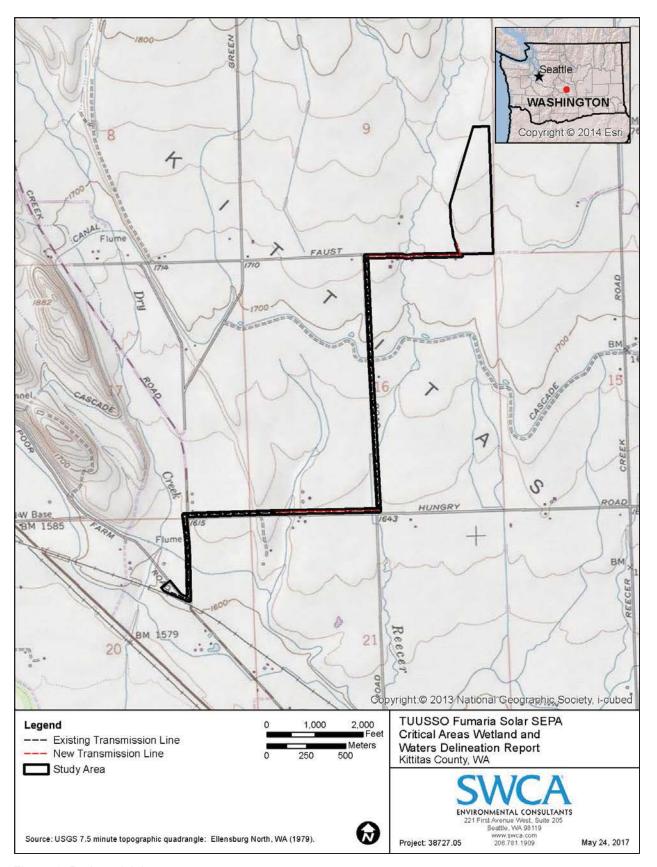


Figure 1. Project vicinity map.

### 2.2 Review of Existing Information

Prior to conducting fieldwork, background materials were reviewed to determine the potential for wetlands, floodplains, habitats, and other critical areas and their buffers to occur within the study area. Materials referenced during the desktop study are listed below. The following checklist follows the KCC Critical Areas required checklist outlined in KCC Chapter 17A.03.035.

### Wetlands (KCC Chapter 17A.04)

- Historical Google Earth aerial photography (2000–2015).
- U.S. Department of Agriculture (USDA) historical imagery (USDA 1954).
- U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map for Ellensburg North, Washington, included in Figure 1.
- USFWS National Wetlands Inventory (NWI) data and USGS National Hydrography Dataset (NHD), included in Figure 2.
- Natural Resources Conversation Service (NRCS) Soil Survey of Kittitas County Area, Washington and NRCS Web Soil Survey map of the study area, included in Figure 3.

### Frequently flooded areas (KCC Chapter 17A.05)

• Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panels 5300950436B and 5300950437B (as cited by Kittitas County 2017), included in Figure 2.

### Geologically hazardous areas (KCC Chapter 17A.06)

- Includes erosion, landslide, mine, and seismic hazard areas.
- Kittitas County COMPAS mapping tool.

### Habitats (KCC Chapter 17A.07)

- Includes riparian habitats and streams and rivers.
- Washington State Department of Fish and Wildlife (WDFW) SalmonScape online mapper.
- WDFW Priority Habitats and Species (PHS) online mapper, included in Figure 3.

### Aquifer recharge areas (KCC Chapter 17A.08)

No critical aquifer recharge locations have been identified in Kittitas County.

Spatial data obtained during the review of existing information were incorporated into Fumaria Solar Project base maps (Figures 1 through 3).

### 2.3 Field Investigation

Following the desktop review of existing information, a team of two biologists conducted site visits on April 5, 6, and 11, 2017, to assess the study area for the presence of wetland and waterbody features and to record data relevant to the Washington State Department of Ecology's (Ecology's) most recently approved version of the *Washington State Wetland Rating System for Eastern Washington, 2014 Update* (Hruby 2014). Visual observations were recorded within 200 feet of the project site and generation tie line, and included wildlife and habitat data.

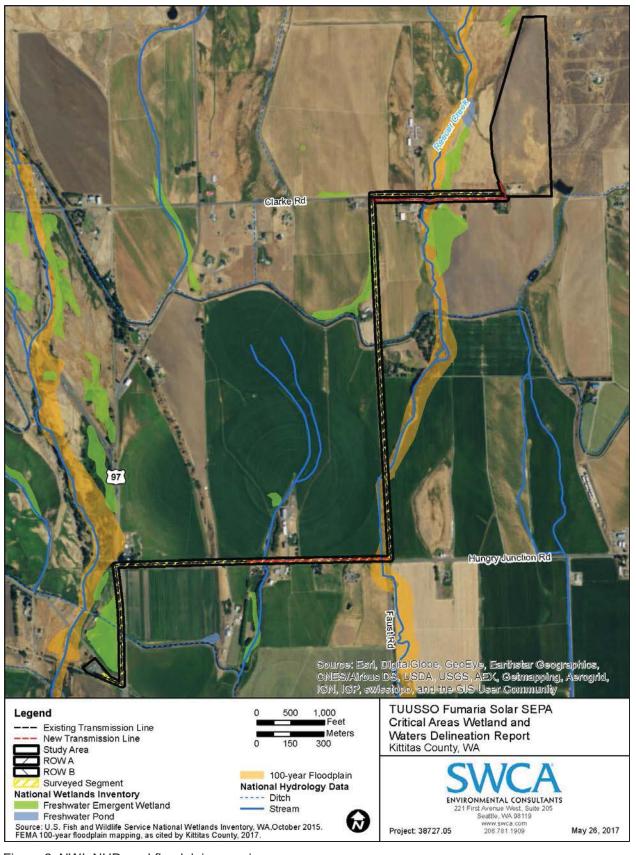


Figure 2. NWI, NHD, and floodplain mapping.

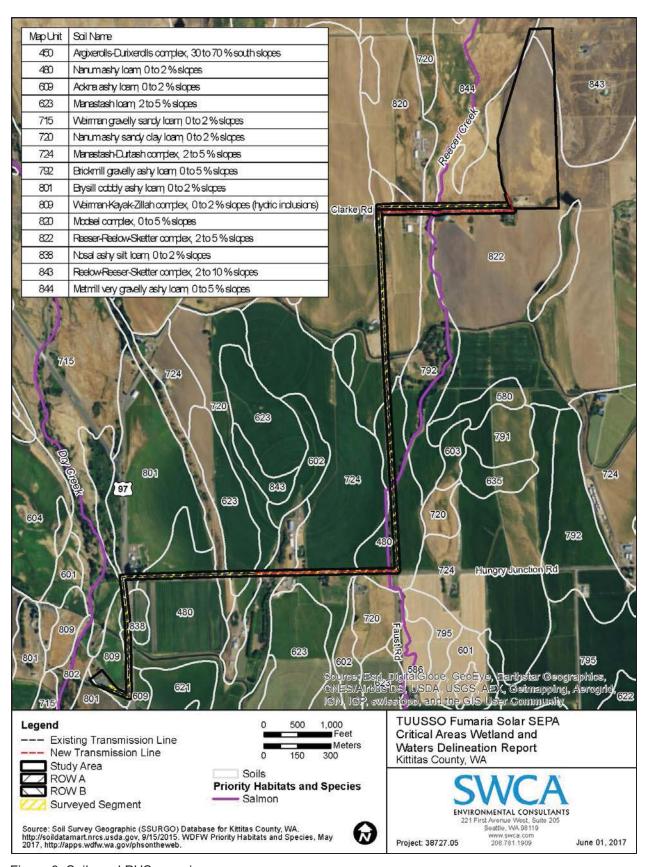


Figure 3. Soils and PHS mapping.

Precipitation data were obtained from the closest wetlands climate analysis (WETS) climate station, the Ellensburg National Weather Service (NWS) station (ELBW1), approximately 5.5 miles to the southeast of the project site in southern Ellensburg, Washington. Historical (1971–2000) average annual rainfall is listed as 8.96 inches. Table 1 shows the monthly precipitation at the Ellensburg NWS weather station for the 3 months prior to the April 5, 6, and 11, 2017, site visits. Table 2 shows the rainfall received 2 weeks prior to the site visits, and the water-year-to-date (WYTD) rainfall. Rainfall recorded 3 months prior to fieldwork was wetter than normal.

Table 1. Precipitation for 3 Months Prior to Site Visits (in inches)

Month	Avenage	30% Chanc	e Will Have	Observed	Within Normal
Month	Average	Less Than	More Than	Precipitation	Range?
March	0.76	0.36	0.93	1.49	Above
February	0.91	0.59	1.10	2.04	Above
January	1.19	0.65	1.45	1.54	Above

Source: NRCS 2017b.

Table 2. Precipitation 2 Weeks Prior to Site Visits (in inches)

Field Study	Precipitation 2 Weeks Prior	WYTD	Inches Above or Below Normal WYTD*
April 4–March 22, 2017	0.70	8.93	2.76 above
April 5–March 23, 2017	0.48	8.93	2.74 above
April 10–March 28, 2017	0.61	9.38	3.10 above

\*Based on average precipitation from 1981 to 2010.

Source: NRCS 2017b.

### 2.3.1 Wetlands

The Fumaria Solar Project study area was investigated for wetlands in accordance with the current methodology of the U.S. Army Corps of Engineers' (USACE's) 2008 *Arid West Regional Supplement (Version 2)* and the *Wetlands Delineation Manual* (Environmental Laboratory 1987). A detailed description of the field methods used in this study is provided in Appendix A.

A Trimble Geo XT global positioning system (GPS) unit was used by the field team to assist in identifying the project site and generation tie line boundaries and to record site spatial data. This device is capable of submeter accuracy. The full extent of the study area was covered by the team of biologists. Photographs were collected and vegetation, soil, and hydrology characteristics were documented. The boundaries for wetlands located outside of the project site and generation tie line but within the study area were approximated using field observations and aerial imagery to determine the extent of on-site wetland buffers.

Geographic information system (GIS) software were used to analyze data and to produce the report figures (Figures 4 through 10). Per WAC 463-60-333 and KCC Chapter 17A, wetlands were rated using the *Washington State Wetland Rating System for Eastern Washington, 2014 Update*. Per KCC 17A.04.020, the resulting wetland ratings were used to determine the County-prescribed range of wetland buffers for each wetland. Table 3 lists Ecology's wetland rating criteria.

# Table 3. Washington State Department of Ecology Wetland Rating System

### Category

2	Category IV wetlands: Wetlands that have the lowest levels of functions and are heavily disturbed. Specific wetlands that meet the Category IV criteria include:  1. wetlands scoring less than 16 points out of 27 on the wetland rating form.	
<b>=</b>	Category III wetlands: Wetlands that provide a moderate level of functions. Specific wetlands that meet the Category III criteria include:  1. wetlands scoring between 16 and 18 points, out of 27, on the wetland rating form.	dance.
=	Category II wetlands: Wetlands that are difficult, though not impossible, to replace, and provide high levels of some functions. Specific wetlands that meet the Category II criteria include:  1. forested wetlands in the floodplains of rivers; 2. mature and old-growth forested wetlands with fast growing trees that are over 0.25 acre in size; 3. vernal pool that are located in a landscape with other wetlands and that are relatively undisturbed during the early spring; and 4. wetlands scoring between 19 and 21 points, out of 27, on the wetland rating form.	Source: Hruby (2014). Kittitas County wetland category definitions defer to Washington Administrative Code for guidance. Appendix F includes the County-issued guidance.
_	Category I wetlands: Represent a unique or rare wetland type; are more sensitive to disturbance than most wetlands; are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime; or provide a high level of functions. Specific wetlands that meet the Category I criteria include:  1. alkali wetlands, characterized by the presence of shallow saline water with a high pH;  2. natural heritage wetlands, specifically, wetlands identified by the Washington Natural Heritage Program/DNR as high quality relatively undisturbed wetlands; and wetlands that support state-listed threatened or endangered plants; 3. bogs and calcareous fens; 4. mature and old-growth forested wetlands with slow growing trees that are over 0.25 acre in size; and 5. wetlands that perform many functions very well, as indicated by a score of 22 or more points out of 27 on the wetland rating form.	Source: Hruby (2014). Kititas County wetland category definitions defer Appendix F includes the County-issued guidance.

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July 10, 2017

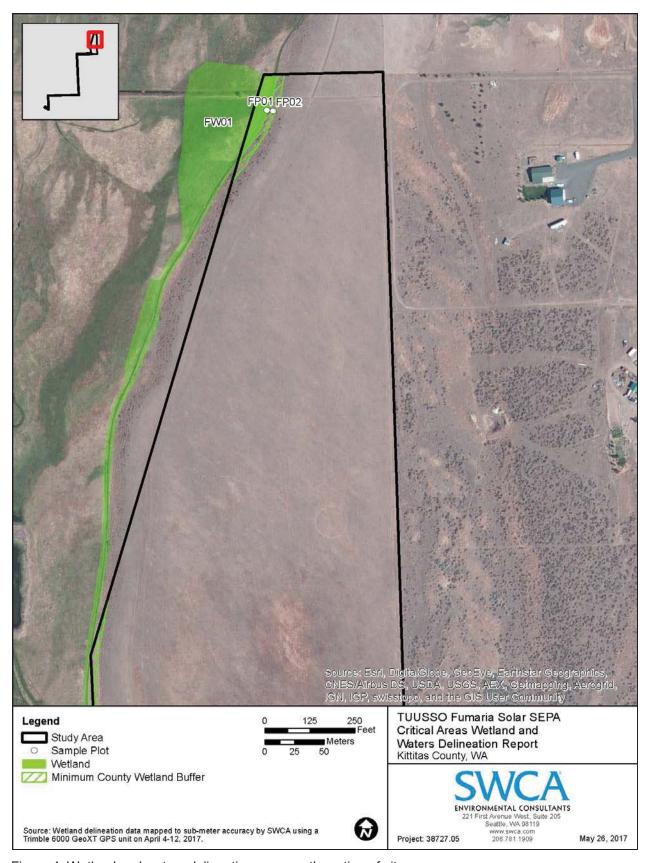


Figure 4. Wetland and waters delineation map, north portion of site.

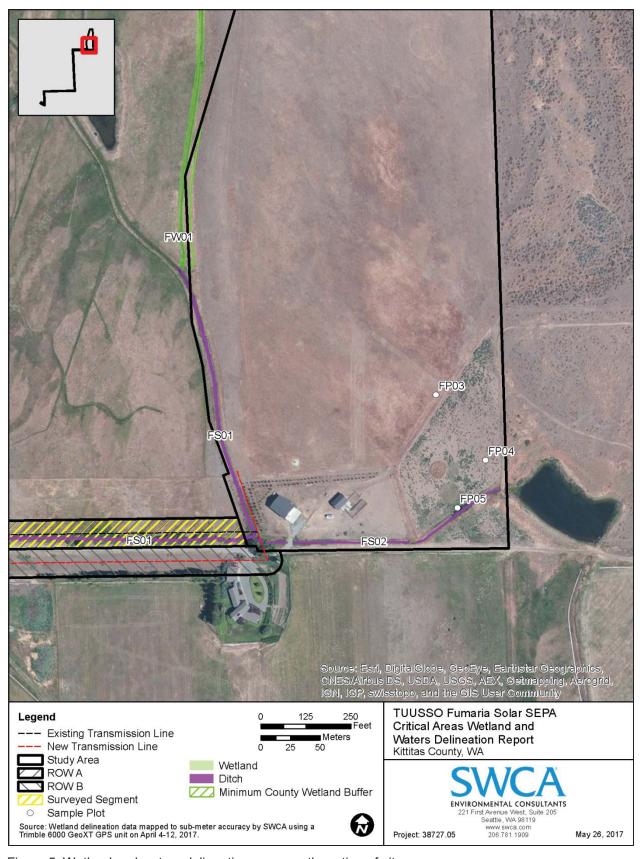


Figure 5. Wetland and waters delineation map, south portion of site.

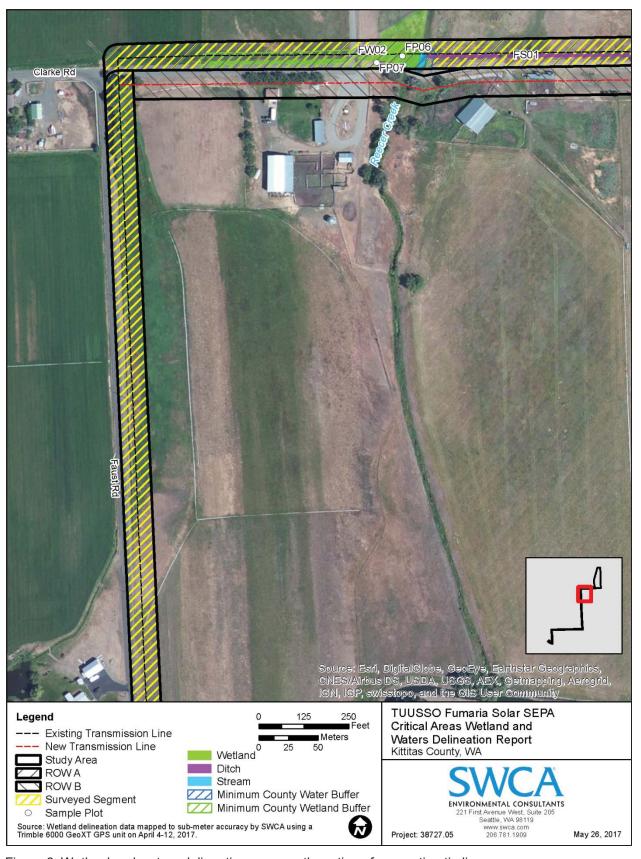


Figure 6. Wetland and waters delineation map, north portion of generation tie line.

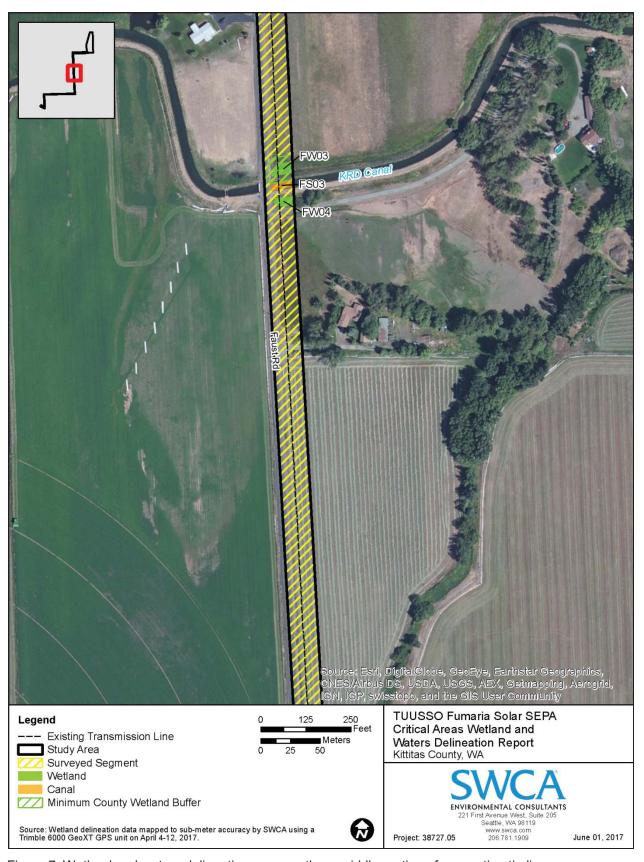


Figure 7. Wetland and waters delineation map, northern middle portion of generation tie line.

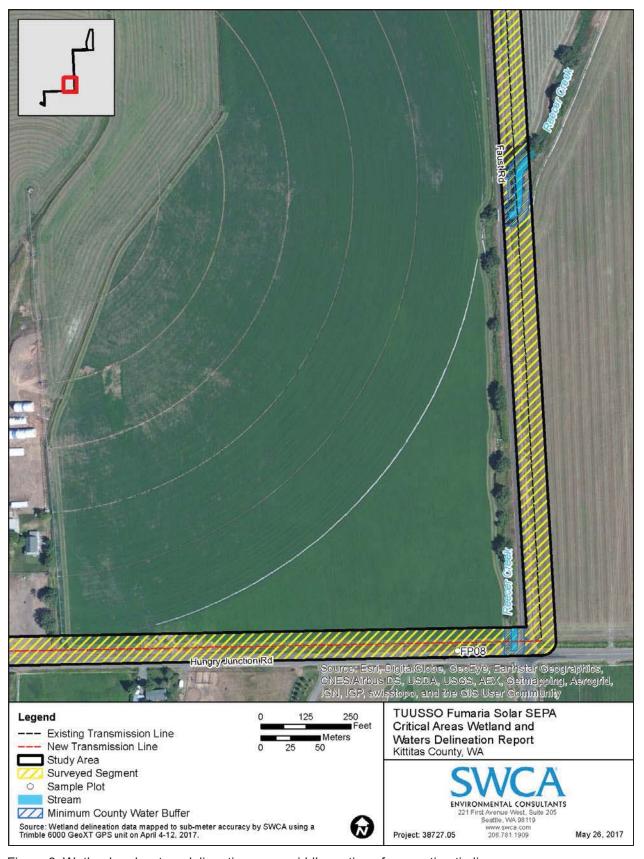


Figure 8. Wetland and waters delineation map, middle portion of generation tie line.

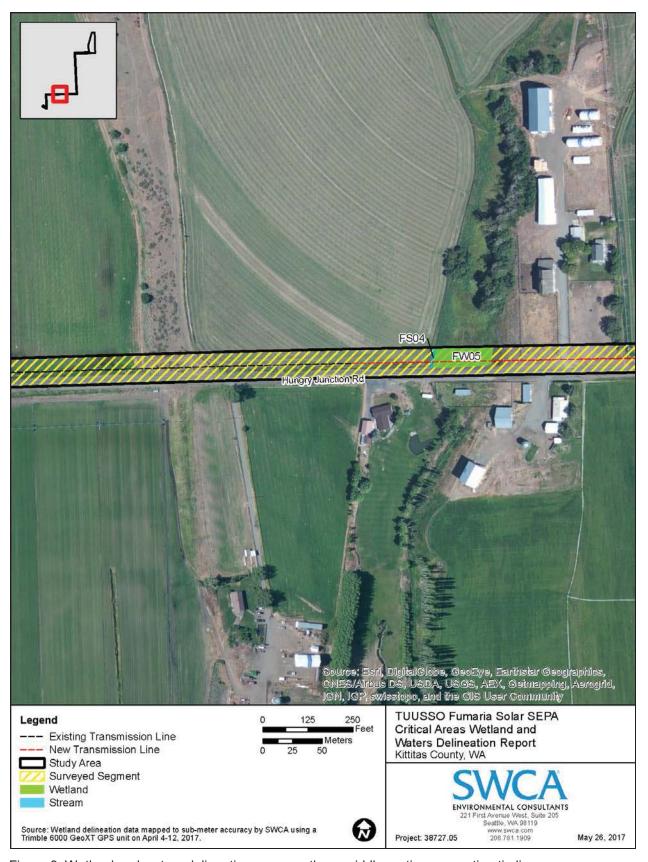


Figure 9. Wetland and waters delineation map, southern middle portion generation tie line.

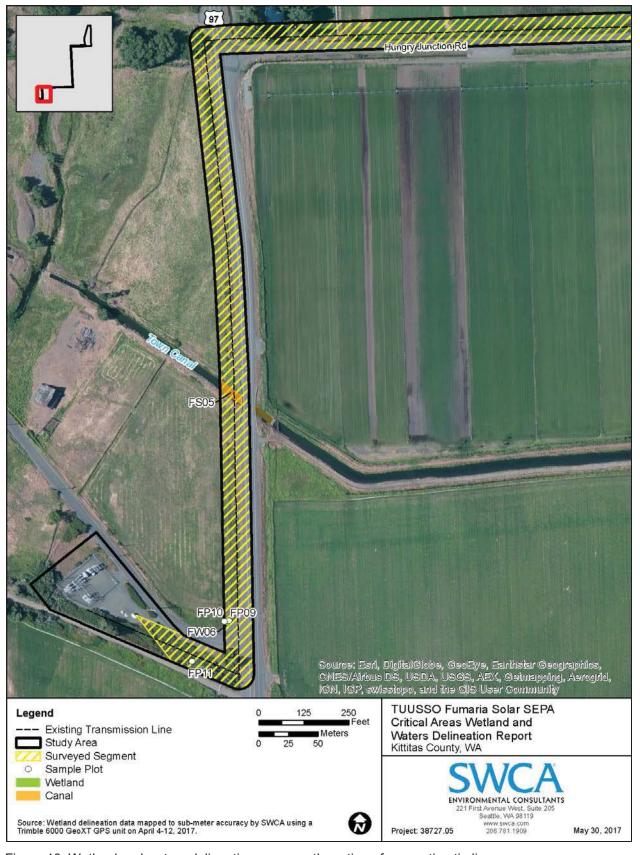


Figure 10. Wetland and waters delineation map, south portion of generation tie line.

Kittitas County's definition of a wetland is based on the Revised Code of Washington (RCW) 36.70A.030, which states:

(21) "Wetland" or "wetlands" means areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from nonwetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from nonwetland areas created to mitigate conversion of wetlands.

A detailed analysis of wetland functions is not included in this report; however, a brief description of wetland functions is provided as part of the general description for each wetland.

### 2.3.2 Riparian Habitats

Biologists also investigated the Fumaria Solar Project study area for the presence of non-wetland waters and used a GPS device to delineate the ordinary high water marks (OHWMs) of streams per the definitions in WAC 173-22-030 (Figures 4 through 10). The OHWMs of streams and rivers outside of the project site and generation tie line but within the study area were approximated using field observations and aerial imagery to determine the extent of on-site stream buffers.

Streams identified in the Fumaria Solar Project study areas were classified according to the WAC stream typing system (WAC 222-16-030). Criteria for this typing system are described in Table 4. The stream types described in this report are based on the stream reaches within the study area; downstream reaches may be rated higher.

Table 4. Summary of the Water Typing System

Stream Type	Definition <sup>a</sup>		
S	All waters, within their bankfull width, as inventoried as "shorelines of the state" under Chapter 90.58 RCW and the rule promulgated pursuant to Chapter 90.58 RCW including periodically inundated areas of their associated wetlands.		
F	All segments of natural waters that are not Type S waters, and that contain fish or fish habitat, including:  1) waters diverted for domestic use by more than 10 residential or camping units or by a public accommodation facility;  2) waters diverted for use by a federal, state, or Tribal fish hatchery from the point of diversion for 1,500 feet or the entire tributary if the tributary is highly significant for protection of downstream water quality;  3) waters that are within a federal, state, local, or private campground having more than 10 camping units; or riverine ponds, wall-based channels, and other channel features that are used by fish for off-channel habitat.		
Np	All segments of natural waters within the bankfull width of defined channels that are perennial non–fish habitat stream Perennial streams are flowing waters that do not go dry any time of a year of normal rainfall and include the intermitte dry portions of the perennial channel below the uppermost point of perennial flow.		
Ns	dry portions of the perennial channel below the uppermost point of perennial flow.  All segments of natural waters within the bankfull width of the defined channels that are not Type S, F, or Np waters. These are seasonal, non–fish habitat streams in which surface flow is not present for at least some portion of a year normal rainfall and the stream is not located downstream from any stream reach that is a Type Np water. Ns waters be physically connected by an above-ground channel system to Type S, F, or Np waters.		

<sup>&</sup>lt;sup>a</sup> Definitions are summarized from WAC 222-16-030. Kittitas County stream type definitions defer to WAC for guidance.

### 3 RESULTS AND DISCUSSION

The Fumaria Solar Project site is an upland terrace that was previously heavily grazed. There is a garage and horse corral in the southwest corner of the project site. Irrigation ditches border the project site on the west and south. The plant community is dominated by weeds and non-native herbaceous species in upland areas, including tall false rye grass (*Schedonorus arundinaceus*), bluegrass (*Poa* spp.), alfalfa (*Medicago sativa*), Shepard's-purse (*Capsella bursa-pastoris*), garden yellow rocket (*Barbarea vulgaris*), prickly lettuce (*Lactuca serriola*), yellow salsify (*Tragopogon dubius*), chicory (*Cichorium intybus*), common dandelion (*Taraxacum officinale*), and downy cheat grass (*Bromus tectorum*). However, much of the project site is beginning to return to native sagebrush habitat with the establishment of native species, including bitter-brush (*Purshia tridentata*), big sagebrush (*Artemisia tridentata*), common spring-gold (*Crocidium multicaule*), spring draba (*Draba verna*), yellow bell (*Fritillaria pudica*), Gorman's desert-parsley (*Lomatium gormanii*), and Rainier violet (*Viola trinervata*). In addition, the site has patches of noxious weeds, including hairy cat's-ear (*Hypochaeris radicata*), spotted knapweed (*Centaurea stoebe*), Canadian thistle (*Cirsium arvense*), Fuller's teasel (*Dipsacus fullonum*), and reed canary grass (*Phalaris arundinacea*).

The generation tie line crosses areas of rural residential use, pastoral lands, turf farms, existing driveways and access roads, irrigation canals, roadside ditches, and ruderal roadside corridors. Plant communities along this area were typically dominated by weeds and non-native species often found in road right-of-ways, including bluegrass, tall false rye grass, reed canary grass, and common dandelion. Refer to Appendix B for a complete list of vegetation observed within the study area.

According to NRCS, the project site encompasses three different soil map units, and the generation tie line encompasses 11 map units (Table 5). These soil map units range from somewhat poorly drained to well drained soils that occur on terraces, floodplains, valleys, fans, escarpments, hills, and hillslopes. The Weirman-Kayak-Zillah complex soil unit is on the National Hydric Soils list (NRCS 2015), which is a list of soils that can be indicative of saturated, flooded, or ponded areas that could meet the definition of a hydric soil.

### 3.1 Wetlands

Six wetlands were delineated within the Fumaria Solar Project study area (one on the solar site and five along the generation tie line). Wetlands were distinguished from adjoining uplands by the presence or absence of indicators for wetland hydrology, hydric soils, and hydrophytic vegetation. Wetland delineation data sheets are provided in Appendix C, photographs are provided in Appendix D, and wetland rating forms are provided in Appendix E.

Table 6 summarizes the size, rating, and classification of wetlands found within the Fumaria Solar Project study area. All delineated wetlands would fall under the jurisdiction of the USACE, Ecology, and Kittitas County. Figures 4 through 10 show the locations of the wetlands, streams, data plots, and their associated minimum protection buffers. The minimum wetland protection buffers were calculated per KCC guidance based on Ecology's Wetland Rating for each wetland. Detailed descriptions of each wetland are provided in the following sections.

Table 5. Soil Mapping within the Study Area

Map Unit Symbol	Map Unit Name	Hydric
450	Argixerolls-Durixerolls complex, 30%-70% south slopes	No
480	Nanum ashy loam, 0%–2% slopes	No
609	Ackna ashy loam, 0%–2% slope	No
623	Manastash loam, 2%–5% slopes	No
720	Nanum ashy sandy clay loam, 0%–2% slopes	No
724	Manastash-Durtash complex, 2%–5% slopes	No
792	Brickmill gravelly ashy loam, 0%–5% slopes	No
801	Brysill cobbly ashy loam, 0%–2% slopes	No
809	Weirman-Kayak-Zillah complex, 0%–2% slopes	Yes
820	Modsel complex, 0%–5% slopes	No
822	Reeser-Reelow-Sketter complex, 2%–5% slopes	No
838	Nosal ashy silt loam, 0%–2% slopes	No
843	Reelow-Reeser-Sketter complex, 2%–10% slopes	No
844	Metmill very gravelly ashy loam, 0%–5% slopes	No

Source: NRCS 2015 and 2017b.

Table 6. Wetland Size, Rating, and Classification for Wetlands within the Study Area

Wetland Name	Delineated Area within the Project (Wetland Rating Unit Size) <sup>a</sup> (acres)	Wetland Rating <sup>b</sup>	Hydrogeomorphic Classification	Cowardin Classification <sup>c</sup>	Dominant Species Observed within Wetland
Solar Site	-		-		
FW01	0.18 (estimated 5.57)	III	Slope	PEM	Reed canary grass, Fuller's teasel, sedge species
Generation	Tie Line	•	•		•
FW02	0.24 (estimated 2.15)	II	Riverine	PEM	creeping wild rye, dock-leaf smartweed, yellow nutsedge, curly dock
FW03	0.03 (estimated 0.58)	III	Depressional	PEM	Reed canary grass, broad-leaf cat-tail
FW04	0.03 (estimated 0.23)	III	Riverine	PEM/PSS	Reed canary grass, broad-leaf cat-tail, crack willow
FW05	0.20 (estimated 1.67)	IV	Riverine	PEM	Reed canary grass
FW06	0.005 (0.005)	IV	Depressional	PEM	Broad-leaf cat-tail

<sup>&</sup>lt;sup>a</sup> Wetland rating unit size is the total area of wetland delineated or estimated based on aerial photograph interpretation and field reconnaissance. Area of delineated portions of the wetlands is based on SWCA survey data.

<sup>&</sup>lt;sup>b</sup> Wetland ratings are based on Washington State Wetland Rating System for Eastern Washington – Revised (Hruby 2014).

<sup>&</sup>lt;sup>c</sup> Cowardin et al. (1979).

### 3.1.1 Wetland FW01

Palustrine emergent Category III

0.18 acre within the project site, approximately 5.57 acres in total

Wetland FW01 is a Slope wetland that has a small amount of acreage within the western boundary of the Fumaria Solar Project site, and the majority of the wetland extending offsite to the west and north (see Figures 4 and 5; and wetland rating Figures 1 through 5 in Appendix E). Delineation data were recorded at sample plots FP01 and FP02, provided on datasheets in Appendix C. Wetland FW01 is located on the eastern edge of a Quaternary alluvial plain, where it meets the toe of slope of a terrace consisting of Mesozoic continental sedimentary rock (Schuster 2005). The eastern wetland boundary is formed where the alluvial plain meets the toe of slope of the terrace. An irrigation ditch flows south along the toe of the slope, just outside of the project site. This irrigation ditch forms the southern half of Wetland FW01. The wetland boundary is defined by an obvious rise in topography and a change in the plant community.

Wetland FW01 is a Palustrine Emergent (PEM) wetland (Cowardin et al. 1979). Refer to Table A-1 in Appendix A for definitions of wetland indictor statuses listed in this section (i.e., FACU, FAC, FACW, and OBL). Dominant pant species included reed canary grass (FACW), Fuller's teasel (FAC), and unidentified sedge species (*Carex spp.*, FAC).

Soils in Wetland FW01 are mapped as Metmill very gravelly ashy loam with 0% to 5% slopes, and Reeser-Reelow-Sketter complex with 2% to 5% slopes (NRCS 2017a) (see Figure 3). The typical soil profile observed within 16 inches of the soil surface consists of very dark brown (10YR 2/2) silt loam over black (10YR 2/1) silty clay loam with redoximorphic features below 5 inches (Munsell Color 2009). The soils in Wetland FW01 meet the hydric soil indicator for Redox Dark Surface (F6).

The primary indicator of drift deposits (non-riverine) and the secondary indicator of drainage patterns were observed within Wetland FW01. The presence of these indicators meets the wetland hydrology criteria.

Wetland FW01 is rated as a Category III wetland in the Ecology rating system (see Table 3), with moderately low scores for water quality improvement (5/9 points) and habitat function (5/9 points), and a moderate score for hydrologic function (6/9). Wetland FW01 has low potential to provide water quality improvement because slope wetlands do not retain water or excess nutrients. Wetland FW01 has moderate hydrologic function because the surrounding landscape is dominated by pastoral land use and is situated in the Reecer Creek basin where flooding problems occur.

### 3.1.2 Wetland FW02

Palustrine emergent Category II

0.24 acre within the generation tie line, approximately 2.15 acres in total

Wetland FW02 is a Riverine wetland consisting of grazed and ungrazed pasture and a roadside ditch (see Figure 6; and wetland rating Figures 1 through 5 in Appendix E). This wetland is located in the surveyed ROW A alignment of the Fumaria Solar Project generation tie line. Delineation data were recorded at sample plots FP06 and FP07 and is provided on datasheets in Appendix C. This wetland has slopes to the south towards Clarke Road and east towards Reecer Creek. The western portion of this wetland extends

along Clarke Road, as a roadside ditch that flows under a driveway through a culvert into the portion of the wetland adjacent to Reecer Creek. The western portion of the wetland is a Slope wetland. The upland boundary of the wetland is defined by the road to the south and a rise in elevation to the north. The eastern portion of the wetland is located within the 100-year floodplain for Reecer Creek (see Figure 2).

Wetland FW02 is a PEM wetland habitat type (Cowardin et al. 1979). The wetland is dominated by creeping wild rye (*Elymus repens*, FAC), dock-leaf smartweed (*Persicaria lapathifolia*, FACW), yellow nutsedge (*Cyperus esculentus*, FACW), and curly dock (*Rumex crispus*, FAC). The dominance of these species meets the wetland vegetation criteria. Wetland FW02 is mapped adjacent to a NWI-mapped palustrine emergent, persistent, seasonally flooded (PEM1C) wetland (see Figure 2).

Soils in Wetland FW02 are mapped as Modsel complex with 0% to 5% slopes, Metmill very gravelly ashy loam with 0% to 5% slopes, and Reeser-Reelow-Sketter complex with 2% to 5% slopes (NRCS 2017a) (see Figure 3). The soil profile observed within 16 inches of the soil surface consists of dark brown (7.5YR 3/2) silt loam over a very dark gray (10YR 3/1) silty clay loam with redoximorphic features from 2 to 8 inches and a black (2.5Y 2.5/1) silt loam with small amounts of redoximorphic features below 8 inches (Munsell Color 2009). The soils in Wetland FW02 meet the hydric soil indicator for Redox Dark Surface (F6).

Only secondary indicators of hydrology were observed within this wetland, including drift deposits (riverine) and drainage patterns. The presence of these indicators meets the wetland hydrology criteria.

Wetland FW02 is rated as a Category II wetland in the Ecology rating system, with a moderate score for water quality improvement (6/9), a high score for hydrologic function (8/9 points), and a moderately low score for habitat function (5/9 points). Wetland FW02 has a moderately high potential to provide hydrologic functions because it is more than twice the width of the adjacent Reecer Creek channel and it has the potential to slow down water movement to help reduce flooding issues directly downstream in Reecer Creek.

### 3.1.3 Wetland FW03

Palustrine emergent
Category III
0.03 acre within the generation tie line, approximately 0.58 acre in total

Wetland FW03 is a Depressional wetland on the north side of the KRD Canal, separated by a constructed berm, and starts just east of the Faust Road ROW, extending east out of the study area to Reecer Creek. This wetland is fed by runoff and irrigation from the agricultural fields to the north (see Figure 7; and wetland rating Figures 1 through 5 in Appendix E). Because this wetland was outside of the road ROW and access to the property to the east of the road was prohibited, no sample plots were recorded. The upland boundary of the wetland appeared to be well defined by an obvious rise in elevation to the north and south of the wetland and changes in the vegetation community.

Wetland FW03 is mostly a PEM wetland habitat type with some potential palustrine scrub-shrub (PSS) wetland areas along the southern wetland boundary (Cowardin et al. 1979). The wetland is dominated by reed canary grass and broad-leaf cat-tail (*Typha latifolia*, OBL) with Nootka rose (*Rosa nutkana*, FACU) along the southern wetland boundary. The dominance of these species meets the wetland vegetation criteria.

Soils in Wetland FW03 are mapped as Reeser-Reelow-Sketter complex, with 2% to 5% slopes (NRCS 2017a) (see Figure 3). Soils were not recorded for this wetland because access to the wetland was prohibited by lack of landowner permission. Therefore, hydric soils were assumed to be present within this wetland based on the presence of wetland vegetation and hydrology observed from the road ROW.

Primary indicators of hydrology observed within this wetland from the road ROW include surface water and inundation visible on aerial imagery. The presence of these indicators meets the wetland hydrology criteria.

Wetland FW03 is rated as a Category III wetland in the Ecology rating system, with a moderately high score for water quality improvement (7/9 points) and moderately low scores for hydrologic and habitat functions (5/9 points). Wetland FW03 has a moderately high potential to provide water quality improvements because it is dominated by ungrazed vegetation, has seasonal ponding over half of the wetland area, and is located in a basin where there are total maximum daily loads (TMDLs) defined (KRD Canal).

### 3.1.4 Wetland FW04

Palustrine emergent/scrub-shrub
Category III
0.03 acre within the generation tie line, approximately 0.23 acre in total

Wetland FW04 is a Riverine wetland on the south side of the KRD Canal, separated by a constructed berm with a culvert, and starts just east of the Faust Road ROW, extending east out of the study area for approximately 360 feet. This wetland is fed by overflow from KRD Canal through the culvert connecting the canal to the wetland through the berm, and by runoff from the field directly south of the wetland (see Figure 7; and wetland rating Figures 1 through 5 in Appendix E). Because this wetland was outside of the road ROW and access to the property to the east of the road was prohibited, no sample plots were recorded. The upland boundary of the wetland appeared to be well defined by an obvious rise in elevation to the north and south of the wetland, and changes in the vegetation community.

Wetland FW04 is predominately a PEM wetland habitat type but also includes an area of PSS wetland just east of the study area boundary (Cowardin et al. 1979). The wetland is dominated by reed canary grass, broad-leaf cat-tail, crack willow (*Salix* X *fragilis*, FAC), and Nootka rose. The dominance of these species meets the wetland vegetation criteria.

Soils in Wetland FW04 are mapped as Reeser-Reelow-Sketter complex, with 2% to 5% slopes (NRCS 2017a) (see Figure 3). Soils were not recorded for this wetland because access to the wetland was prohibited by lack of landowner permission. Therefore, hydric soils were assumed to be present within this wetland, based on the presence of wetland vegetation and the hydrology observed from the road ROW.

Primary indicators of hydrology observed within this wetland from the road ROW include surface water and inundation visible on aerial imagery. The presence of these indicators meets the wetland hydrology criteria.

Wetland FW04 is rated as a Category III wetland in the Ecology rating system, with moderately high scores for water quality improvement and hydrologic function (7/9 points) and a low score for habitat function (4/9 points). Wetland FW04 has moderately high potential to provide water quality improvement and hydrologic function because the majority of it is a depression, all of it is ungrazed,

there are TMDLs defined in the same basin (KRD Canal), the ratio of the wetland width to the adjacent channel width is greater than 1, and there are flooding problems in the basin immediately down gradient (Reecer Creek).

### 3.1.5 Wetland FW05

Palustrine emergent Category IV 0.20 acre within the generation tie line, approximately 1.67 acres in total

Wetland FW05 is a Riverine wetland located just north of the Hungry Junction Road ROW and is fed by flooding from the intermittently flowing ditched stream that is a tributary to Town Canal to the south (see Figure 9; and wetland rating Figures 1 through 5 in Appendix E). Because this wetland was outside of the road ROW and access to the property to the north of the road was prohibited, no sample plots were recorded. The upland boundary of the wetland appeared to be well defined by an obvious rise in elevation to the east, and a change in the vegetation community to west.

Wetland FW05 is a PEM wetland habitat type with one crack willow growing within the wetland (Cowardin et al. 1979). The wetland is completely dominated by reed canary grass. The dominance of this species meets the wetland vegetation criteria.

Soils in Wetland FW05 are mapped as Nanum ashy loam, with 0% to 2% slopes (NRCS 2017a) (see Figure 3). Soils were not recorded for this wetland because access to the wetland was prohibited by lack of landowner permission. Therefore, hydric soils were assumed to be present within this wetland based on the presence of wetland vegetation and hydrology observed from the road ROW.

Secondary indicators of hydrology observed within this wetland from the road ROW include drainage patterns, drift deposits (riverine), and saturation visible on aerial imagery. No primary indicators of hydrology could be determined from the road ROW. The presence of these indicators meets the wetland hydrology criteria.

Wetland FW05 is rated as a Category IV wetland in the Ecology rating system, with a moderately high score for hydrologic function (7/9 points) and low scores for water quality improvement and habitat function (4/9 points). Wetland FW05 has a moderately high potential to provide hydrologic functions because it has a width greater than 2 times the width of the stream channel, ungrazed vegetation dominates the wetland, and there are flooding problems down-gradient of the wetland (Yakima River).

### 3.1.6 Wetland FW06

Palustrine emergent Category IV 0.005 acre within the generation tie line and in total

Wetland FW06 is a Depressional wetland located northwest of the intersection of McManamy Road and U.S. Highway 97 and is fed by overland flow from the pastures to the north (see Figure 10; and wetland rating Figures 1 through 5 in Appendix E). Delineation data were recorded at sample plots FP09 and FP10 and is provided on datasheets in Appendix C. The uplands directly around this wetland appear to be mowed periodically. The upland boundary of the wetland is defined by a slight change in elevation and vegetation community change in every direction. A culvert is located at the southern end of the

wetland, higher in elevation than the area of seasonal ponding and allows intermittent flow under McManamy Road.

Wetland FW06 is a PEM wetland habitat type (Cowardin et al. 1979). The wetland is dominated by broad-leaf cat-tail and reed canary grass. The dominance of these species meets the wetland vegetation criteria.

Soils in Wetland FW06 are mapped as Weirman-Kayak-Zillah complex, with 0% to 2% slopes (NRCS 2017a) (see Figure 3). The soil profile observed within 16 inches of the soil surface consists of a black (10YR 2/1) coarse silt loam that transitions to a silty clay loam soil deeper with redoximorphic features and faint depletions starting at 8 inches, over a dark grayish brown (10YR 4/2) silty clay loam starting at 12 inches (Munsell Color 2009). The soils in Wetland FW05 meet the hydric soil indicator for Redox Dark Surface (F6).

Primary indicators of hydrology within the wetland include saturation from 0 to 8 inches (surface water driven). Secondary indicators of hydrology within the wetland include drainage patterns and FAC-neutral test. The presence of these indicators meets the wetland hydrology criteria.

Wetland FW06 is rated as a Category IV wetland in the Ecology rating system, with a moderately high score for water quality improvement (7/9 points), low score for hydrologic function (4/9 points), and a very low score for habitat function (3/9 points). Wetland FW06 has a moderately high potential to provide water quality improvements because it is dominated by ungrazed vegetation, has a relatively constrained outlet, and eventually discharges into a stream on the 303(d) list that also has defined TMDLs (Dry Creek).

### 3.2 Frequently Flooded Areas

FEMA floodplain mapping depicts the 100-year floodplain surrounding Reecer Creek, which crosses the Fumaria Solar Project generation tie line three times (see Figure 2). This area overlaps Wetland FW02, with a total area of 1.90 acres within the study area, but it is located entirely outside of the project site and will likely be avoided during project design. Development within the 100-year floodplain will be avoided; therefore, no net loss of floodplain storage will be achieved.

### 3.3 Geologically Hazardous Areas

The Fumaria Solar Project site is not within any mapped geologically hazardous areas. No erosion/landslide geologic hazard areas, snow avalanche hazards, or mine hazard areas are mapped on any of the parcels that encompass the project site (Kittitas County 2017). The project will not require specialized engineering to ascertain that the property is suitable for development.

### 3.4 Habitats

Based on the criteria provided in KCC Chapter 17A.07, the Fumaria Solar Project study area includes riparian habitat and priority species habitat. The project is not located on federal land or land owned or leased by the WDFW, and therefore is not considered big game winter range.

### 3.4.1 Riparian Habitat

One perennial stream (Reecer Creek), one unnamed intermittent stream (FS04), two canals (KRD and Town Canals), and two ephemeral and numerous roadside ditches are located in the Fumaria Solar Project study area. Based on the field observations, Reecer Creek and FS04 are considered jurisdictional

waters for the USACE, Ecology, and Kittitas County because they satisfy the definition of "waters of the United States" under the Clean Water Rule 40 CFR 230.3. The ephemeral ditches, roadside ditches, and canals ultimately feed into jurisdictional waters could be considered jurisdictional. Table 7 summarizes the size, rating, and classification of the streams found in the study area (see Figures 4 through 10). Photographs of these features are provided in Appendix D.

Table 7. Summary of Streams in the Study Area

Stream Name	Tributary to	Stream Type <sup>a</sup>	USACE Jurisdiction <sup>b</sup>	Average Width in Study Area (feet) <sup>c</sup>	Approximate Length in the Project (feet) c
Reecer Creek	Yakima River	F	RPW	14	290
Ephemeral ditch (FS01)	Reecer Creek	N/A	N/A	8	1,760
Ephemeral ditch (FS02)	FS01	N/A	N/A	5	680
KRD Canal (FS03)	Yakima River	N/A	N/A	15	63
Unnamed stream (FS04)	Town Canal	Ns	NRPW	6	57
Town Canal (FS05)	Yakima River	N/A	N/A	16	74
Roadside ditches	Varies	N/A	N/A	3	1,920

<sup>&</sup>lt;sup>a</sup> F = fish-bearing (WAC 222-16-030), Ns = non-fish-bearing (WAC 222-16-030), N/A = not applicable, due to ditches and canals being excluded from the WAC typing system;

### 3.4.1.1 Reecer Creek

Reecer Creek is a perennial, fish-bearing tributary of the Yakima River in the Currier Creek subwatershed that has a total drainage basin of 46 square miles. Reecer Creek crosses the Fumaria Solar Project generation tie line three times, once along Clarke Road approximately 880 feet east of Faust Road, once along Faust Road approximately 1,220 feet north of Hungry Junction Road, and once along Hungry Junction Road directly west of Faust Road. Within the study area, Reecer Creek averages approximately 14 feet wide and has a FEMA-mapped 100-year floodplain extending from both sides of the creek's OHWM, which encompasses most of the delineated Wetland FW02 north of Clarke Road within the ROW A alignment of the generation tie line. The riparian areas surrounding Reecer Creek are dominated by crack willow and reed canary grass across most the study area. According to WDFW mapping (WDFW 2017a, WDFW 2017b), rainbow trout (*Oncorhynchus mykiss*) is present in Reecer Creek within the study area. Therefore, Reecer Creek is designated as a Type F water, based on the Washington Water Typing Criteria (WAC 222-16-030).

### 3.4.1.2 Unnamed Stream (FS04)

This unnamed intermittent stream is a tributary of Town Canal, located approximately 0.33 mile south of the Fumaria Solar Project generation tie line, through a 2-foot-wide culvert under Hungry Junction Road. This stream appears to begin 0.63 mile north of the study area, from two channels that drain the agricultural fields to the north. Within the generation tie line, the stream's OHWM is approximately 6

<sup>&</sup>lt;sup>b</sup> RPW = relatively permanent water; NRPW = non-relatively permanent water, N/A = not applicable, due to exclusion from jurisdiction:

<sup>&</sup>lt;sup>c</sup> Average widths and approximate lengths were determined based on SWCA survey data and field observations.

feet wide. Vegetation along the stream is dominated by reed canary grass, with one mature crack willow growing along the east bank approximately 230 feet north of the generation tie line. Current WDFW mapping suggests that fish species do not occur in this stream (WDFW 2017a, 2017b). This stream appears to have been ditched and has a substrate of cobbles and silt. Based on the Washington Water Typing Criteria (WAC 222-16-031) guidance, this stream would be rated as a seasonal non-fish-bearing water, Type Ns.

### 3.4.1.3 Ephemeral Ditches (FS01 and FS02)

Two ephemeral ditches (FS01 and FS02) were delineated within the Fumaria Solar Project site. FS01 enters the western project site boundary just after Wetland FW01 feeds into it directly offsite. It flows south along the project site boundary and then turns west to flow into Reecer Creek along Clarke Road within the surveyed ROW A alignment. FS02 starts in the southwestern corner of the project site, where it is fed by FS01 through flow control structures. It then flows east across the southern project site boundary before turning northeast to flow to an offsite pond, passing through several culverts along the way. Vegetation was similar around both of these ditches and included Nootka rose, narrow-leaf willow (Salix exigua), lamp rush (Juncus effusus), curly dock, prickly lettuce, tall false rye grass, Canadian thistle, and devil's pitchfork (Bidens frondosa).

The remaining roadside ditches and canals (KRD and Town Canals) that were delineated within the Fumaria Solar Project generation tie line would likely not be considered jurisdictional waters because they are highly managed man-made watercourses.

These ditches and canals are excluded from the WAC typing system, therefore they have not been assigned a stream type.

### 3.4.2 Priority Habitats and Species

There are a number of PHS-listed salmonid species mapped in Reecer Creek, which passes through the Fumaria Solar Project generation tie line (WDFW 2017a). Rainbow trout is listed as having migrating populations within the study area. Reecer Creek provides adequate fish habitat functions throughout much of its course and could be subject to additional buffer recommendations by WDFW and Kittitas County. PHS mapping is depicted in Figure 3.

PHS mapper also shows an overlay for sharp-tailed snake (*Contia tenuis*) at an accuracy level of quarter (1/4) PLSS section, and overlaps all areas of the study area north of Hungry Junction Road, including the project site (WDFW 2017a). However, there is no suitable habitat for this species in or directly adjacent to the study area.

### 3.5 Aquifer Recharge Areas

As described in KCC 17A.08.010, no critical aquifer recharge locations have been identified in Kittitas County. Additionally, the Fumaria Solar Project will not involve any hazardous materials or disposal of on-site sewage. No well-heads have been identified within the study area.

### 4 CONCLUSIONS AND RECOMMENDATIONS

EFSEC will provide permitting requirements for the Fumaria Solar Project, but this report evaluates and shows compliance with County requirements. A review of the Fumaria Solar Project study area determined that the following Kittitas County defined critical areas have the potential to be affected by the project:

- Wetlands
- Frequently Flooded Areas
- Habitats:
  - o Riparian Habitat
  - Priority Habitats and Species

A summary of all wetlands, waters, and critical area buffers documented within the study area is provided in Table 8. The wetland and non-wetland waters identified in and adjacent to the study area will likely be determined jurisdictional by Ecology and the USACE, including the delineated ditches. Although EFSEC will provide permitting requirements for the proposed project, to show compliance with County requirements, KCC guidance (Chapter 17A.07.010) defines a minimum 20-foot protection buffer for Type F waters, such as Reecer Creek. However, up to a 100-foot protection buffer could be requested once Kittitas County has had the opportunity to review the results of this study and has had discussions with TUUSSO Energy (see Figures 6 and 8). KCC guidance does not define protection buffers for irrigation canals and ditches, such as the KRD and Town Canals and all delineated ephemeral ditches, because they do not qualify as streams. In addition, KCC guidance specifies that no protection buffer is needed for Type Ns waters, such as the unnamed stream (FSO4).

The minimum and maximum wetland protection buffers required by the KCC (Chapter 17A.04.020) are listed in Appendix F, and are provided for these wetlands in Table 8, but only the minimum protection buffers are depicted on Figures 4 through 10. Consultation with the County would be required to determine exact buffer distances.

Table 8. Wetland and Waters Summary

Critical Area	Wetland Rating/ Water Typing <sup>a</sup>	Kittitas County Minimum/Maximum Buffer Distances (feet) <sup>b</sup>	Total Size of Feature Within the Project (acres) <sup>c</sup>
Wetlands			
Wetland FW01	III	20 / 80	0.18
Wetland FW02	II	25 / 100	0.24
Wetland FW03	III	20 / 80	0.03
Wetland FW04	III	0 / 0 <sup>d</sup>	0.03
Wetland FW05	IV	0 / 0 <sup>d</sup>	0.20
Wetland FW06	IV	0 / 0 <sup>d</sup>	0.005
Frequently Flooded A	reas		
100-year flood zone (Reecer Creek)	N/A	N/A	1.90
Riparian Habitat			
Reecer Creek	F	20 / 100	0.12
Ephemeral ditch (FS01)	N/A	None	0.32

Table 8. Wetland and Waters Summary

Critical Area	Wetland Rating/ Water Typing <sup>a</sup>	Kittitas County Minimum/Maximum Buffer Distances (feet) <sup>b</sup>	Total Size of Feature Within the Project (acres) <sup>c</sup>
Ephemeral ditch (FS02)	N/A	None	0.08
KRD Canal (FS03)	N/A	None	0.03
Unnamed stream (FS04)	Ns	None	0.01
Town Canal (FS05)	N/A	None	0.04
Roadside ditches	N/A	None	0.18

<sup>&</sup>lt;sup>a</sup> II = Category II (Hruby 2014); III = Category III (Hruby 2014); IV = Category IV (Hruby 2014); F = fish-bearing (WAC 22-16-030); Ns = seasonal non-fish-bearing (WAC 22-16-030);

Design plans are incomplete for the proposed Fumaria Solar Project; however, TUUSSO Energy will attempt to design the project to avoid, reduce, or eliminate impacts to wetlands, waters, and their buffers. Following the finalization of the design footprint, all removal-fill activities proposed within jurisdictional features would require a Joint Aquatic Resources Permit Application (JARPA) submitted for USACE and Ecology review.

There is no minimum threshold to implement mitigation sequencing for potential impacts to wetland and waters features. Where possible, the Fumaria Solar Project should demonstrate avoidance of jurisdictional features and then minimization of impacts. Avoidance and minimization could be achieved by making minor design alterations around delineated feature boundaries.

Where impact avoidance is not possible, mitigation measures should be implemented to minimize temporary construction disturbance and other permanent alterations to the features. Mitigation would include the implementation of construction best management practices. Where permanent alterations to wetland and waters features are unavoidable, wetland mitigation measures to achieve "no net loss" would be required. Desktop research shows that there are no approved mitigation banks or in-lieu fee programs in Kittitas County; therefore, any mitigation that would be required must be conducted as an Advance Permittee-Responsible Mitigation. Under KCC guidance (Chapter 17A.04.050), the mitigation ratio for a Category II wetland is 2:1, and the mitigation ratio for a Category III wetland is 1:1.

### 5 DISCLAIMER

This report documents the investigation, best professional judgment, and conclusions of the investigators. This should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and is not a final determination.

<sup>&</sup>lt;sup>b</sup> Only minimum buffer distances are depicted on maps;

<sup>&</sup>lt;sup>c</sup> Does not include buffer areas;

<sup>&</sup>lt;sup>d</sup> No Kittitas County buffer is defined because the wetland area is below the minimum size threshold for protection or is rated as a Category IV; however, building setbacks may be required based on zoning lot line setbacks, but would not exceed 25 feet.

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APPENDIX A: WETLAND DELINEATION METHODOLOGY

Wetlands are defined as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and which under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. The methods used to delineate wetlands within the study area conform to guidance in the Washington State Wetland Identification and Delineation Manual (Ecology 1997), the Corps of Engineers Wetland 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).

To be considered a wetland by the U.S. Army Corps of Engineers (USACE), an area must express hydrophytic vegetation, hydric soils, and wetland hydrology. SWCA Environmental Consultants (SWCA) staff documented site conditions for these parameters in areas representative of the study area and in areas most likely to exhibit wetland features. Staff collected additional data in associated uplands, as needed, to confirm wetland boundaries. Wetland boundaries, stream boundaries, and wetland data plot locations in the study area were recorded with a Trimble Geo XT global positioning system (GPS) unit. All delineated wetlands and streams were processed and projected onto existing base maps using ArcGIS software.

#### Vegetation

The dominant and sub-dominant plants were identified and recorded at each sample plot location. These plants were evaluated based on their wetland indicator status to determine if the vegetation was hydrophytic. SWCA biologists utilized the 50/20 rule per USACE recommendations to determine which plants were dominant at each sample plot. Under this guidance, absolute cover estimates were made for each species found rooted within the sample plot radius for each vegetative strata found in the habitat (tree, sapling/shrub, herb, and woody vine). Refer to the USACE regional supplement for exact applications of this method of determining dominance (USACE 2008).

Sample plot radii varied in size depending on site topography and habitat complexity. When documenting vegetation in smaller or oddly-shaped wetlands or habitat features, vegetation strata radii may be adjusted to more accurately depict vegetation rooted within the wetland or habitat feature being delineated.

Hydrophytic vegetation is defined as vegetation adapted to wetland conditions, such as inundation or prolonged saturation. To meet the hydrophytic vegetation criterion, more than 50% of the total dominant plants across all stratums must have a wetland indicator status of Facultative (FAC), Facultative Wetland (FACW), or Obligate (OBL). The wetland indicator status is assigned to plant species that have the potential to occur in wetlands by the USACE (Lichvar et al. 2016). Table A-1 lists the definitions for each wetland indicator status.

Table A-1. Definitions for Each Wetland Plant Indicator Status

Wetland Indicator Status	Symbol	Definition
Obligate Wetland Plants	OBL	Plants that almost always (> 99% of the time) occur in wetlands, but which may rarely (< 1% of the time) occur in non-wetlands.
Facultative Wetland Plants	FACW	Plants that often (67 to 99% of the time) occurs in wetlands, but sometimes (1 to 33% of the time) occur in non-wetlands.
Facultative Plants	FAC	Plants with a similar likelihood (34 to 66% of the time) of occurring in both wetlands and non-wetlands.
Facultative Upland Plants	FACU	Plants that sometimes (1 to 33% of the time) occur in wetlands, but occur more often (67 to 99% of the time) in non-wetlands.
Upland Plants	UPL	Plants that rarely (< 1% of the time) occur in wetlands, and almost always (> 99% of the time) occur in non-wetlands.

Source: Lichvar et al. (2016).

SWCA biologists identified plants found in the field to species whenever possible, when adequate vegetative or flowering characteristics were available. Scientific and common plant names were reported with the currently accepted nomenclature.

#### Soils

An area typically must contain hydric soils to be considered a wetland, except when problematic site conditions occur. Hydric soils typically form under an area that experiences durations of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper portion of the soil profile. Chemical and biological processes in saturated soil result in reduced oxygen concentrations and promote anaerobic metabolism in microorganisms. These prolonged anaerobic conditions often create mottling and other distinct patterns in the soil, which are used as indicators of hydric soils. The hue, value, and chroma and relative percentage of mottling are recorded in the field at each data plot location. Other important hydric soil indicators include organic matter accumulations in the surface horizon, reduced sulfur odors, and organic matter staining in the soil profile (Natural Resource Conservation Service [NRCS] 2017a).

SWCA staff examined soil profiles at each data plot location by excavating sample pits to a depth of 16 to 20 inches to observe the soil profile, colors, and textures. In some cases, a shallower soil pit was used due to shovel refusal from obstructions in the soil profile, such as gravel, bedrock, thick roots, or clay hardpan. Munsell color charts (Munsell Color 2009) were used to determine soil colors in the field.

#### Hydrology

SWCA staff investigated the entire project area for evidence of wetland hydrology. Where data plot locations were taken, additional notes were recorded to fully document the presence of primary and secondary wetland hydrology indicators at the sample location. According to the USACE, wetland hydrology criteria were considered to be satisfied if the soil was seasonally inundated or saturated to the surface for a consecutive number of days greater than or equal to 12.5% of the growing season. The growing season for the area was determined based on the period in which temperatures are above 28 degrees Fahrenheit 5 out of 10 years (Ecology 1997) using the long-term climatological data collected by the NRCS (2017). Using the wetlands climate analysis (WETS) table for the nearest station (Ellensburg, Washington), the growing season was approximated as typically between April 20 and October 10, or a total of 173 days (NRCS 17b).

However, often times multiple site visits to determine the duration of seasonal inundation or saturation are not possible. Therefore, field indicators are used in an attempt to determine an area's hydro-period through field observations. Wetland hydrology indicators are divided into two categories: primary and secondary indicators (USACE 2008). Primary indicators of hydrology include, but are not limited to, surface inundation and high water table and saturated soils within 12 inches of the soil surface. The presence of one primary indicator is sufficient to conclude that wetland hydrology is present. Secondary hydrology indicators are also recorded and may substitute in the case of a lack of any primary indicators if multiple secondary indicators are observed. Secondary indicators of hydrology include, but are not limited to, drainage patterns, crayfish burrows, and dry-season water table (USACE 2008). If no primary indicators, and fewer than two secondary indicators, are observed within the sample area, then it is likely that the area is not considered a wetland, unless problematic conditions exist on-site. Aerial and historic imagery are often reviewed before and after site visits to ensure all possible hydrology indicators are taken into account.

#### References

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**APPENDIX B: VEGETATION LIST** 

# Fumaria Solar Site and Transmission Line Project Vegetation Table April 5, 6, and 11, 2017

Common Name	Scientific Name	Wetland	Native / Introduced		
		Indicator	and Invasive / Noxious		
		Status <sup>1</sup>			
fragile onion	Allium scilloides	NOL	native		
purple threeawn	Aristida purpurea	NOL	native		
big sagebrush	Artemisia tridentata	NOL	native		
Garden Yellow-Rocket	Barbarea vulgaris	FAC	non-native		
Devil's-Pitchfork	Bidens frondosa	FACW	native		
downy cheat grass	Bromus tectorum	NOL	non-native		
Shepherd's-Purse	Capsella bursa-pastoris	FACU	non-native		
sedge	Carex species	OBL to FACU	-		
spotted knapweed	Centaurea stoebe	NOL	noxious		
Chicory	Cichorium intybus	FACU	non-native		
Canadian Thistle	Cirsium arvense		invasive, noxious		
Red Osier	Cornus alba	FACW	native		
1	Crocidium multicaule	NOL	native		
common spring-gold	-	FACW			
Chufa (yellow nutsedge)	Cyperus esculentus		native, noxious		
Fuller's Teasel	Dipsacus fullonum	FAC	invasive, noxious		
spring draba	Draba verna	NOL	native		
Creeping Wild Rye	Elymus repens	FAC	non-native		
tall annual willowherb	Epilobium brachycarpum	NOL	native		
yellow bell	Fritillaria pudica	NOL	native		
Hairy Cat's-Ear	Hypochaeris radicata	FACU	non-native, noxious		
Lamp Rush	Juncus effusus	FACW	native		
Prickly Lettuce	Lactuca serriola	FACU	non-native		
Gorman's desert-parsley	Lomatium gormanii	NOL	native		
nine-leaf lomatium	Lomatium triternatum	NOL	native		
alfalfa	Medicago sativa	UPL	non-native		
Dock-Leaf Smartweed	Persicaria lapathifolia	FACW	non-native		
Reed Canary Grass	Phalaris arundinacea	FACW	invasive, noxious		
bluegrass	Poa species	FAC?	-		
Wright's Rabbit-Tobacco	Pseudognaphalium canescens	FACU	native		
bitter-brush, antelope-brush	Purshia tridentata	NOL	native		
Nootka Rose	Rosa nutkana	FACU	native		
Curly Dock	Rumex crispus	FAC	non-native		
Narrow-Leaf Willow	Salix exigua	FACW	native		
crack willow	Salix X fragilis	FAC	non-native		
Tall False Rye Grass	Schedonorus arundinaceus	FACU	non-native		
maidenstears	Silene vulgaris	NOL	non-native		
Field Sow-Thistle	Sonchus arvensis	FACU	non-native		
Common Dandelion	Taraxacum officinale	FACU	non-native		
yellow salsify	Tragopogon dubius	NOL	non-native		
Broad-Leaf Cat-Tail	Typha latifolia	OBL	native		
Great Mullein	Verbascum thapsus	FACU	non-native		
Rainier violet	Viola trinervata	NOL	native		
III VAII IICI VIOICI					

<sup>&</sup>lt;sup>1</sup>Wetland Indicator Status (WIS) from the NWPL AW Region - see below.

A question mark (?) preceded by a space indicates our default assumption that the plant is FAC.

Wetland Indicator Status (WIS) and taxonomy for the AW Region per the National Wetland Plant List 2016v3.3:

(common names are capitalized) <a href="http://wetland-plants.usace.army.mil/">http://wetland-plants.usace.army.mil/</a> Accessed January 10, 2017

WIS for non-wetland plants and taxonomy from Reed 1988 and Reed et al. 1993, and the USDA PLANTS database: (common names are not capitalized) <a href="http://plants.usda.gov/">http://plants.usda.gov/</a> Accessed multiple dates

Native per Hitchcock & Cronquist 1973 and http://plants.usda.gov/ Noxious per Washington State NWCB 2017

http://www.nwcb.wa.gov/

WETLAND INDICATOR STATUS - Arid V	Vest Region
OBL	Catatail vellow-skunk-cabbage
FACW	<b>Facultative Wetland</b> - Usually is a hydrophyte but occasionally found in uplands. Examples: Oregon ash, red osier
FAC	<b>Facultative</b> – Commonly occurs as either a hydrophyte or non-hydrophyte. Examples: red alder, salmon raspberry
FACU	<b>Facultative Upland</b> - Occasionally is a hydrophyte but usually occurs in uplands. Examples: big-leaf maple, Himalayan blackberry
UPL	<b>Upland</b> - Rarely is a hydrophyte, almost always in uplands. These plants have been removed from the NWPL WMVC Region.
NOL	Not Listed - Not on the list; assumed to be UPL.



Landform (hillslope, terrace, etc.): Channel  Subregion (LRR): B, Columbia/Snake River Plateau Lat: 47.06  Soil Map Unit Name: Metmill very gravelly ashy loam, 0 to 5 percent Are climatic / hydrologic conditions on the site typical for this time of year?  Are Vegetation ,Soil , or Hydrology significant of the side of	NWI classification: None  Yes No X* (If no, explain in Remarks)  cantly disturbed? Are "Normal Circumstances" present? Yes X No  Illy problematic? (If needed, explain any answers in Remarks.)
Landform (hillslope, terrace, etc.):  Subregion (LRR): B, Columbia/Snake River Plateau  Soil Map Unit Name: Metmill very gravelly ashy loam, 0 to 5 percent Are climatic / hydrologic conditions on the site typical for this time of year?  Are Vegetation ,Soil , or Hydrology significant of the vegetation of the site typical for this time of year?  Are Vegetation ,Soil , or Hydrology significant of the vegetation of the site typical for the time of year?  Are Vegetation ,Soil , or Hydrology significant of the vegetation of the veget	Local relief (concave, convex, none): Concave Slope (%): 2  4516 Long: -120.583705 Datum: NAD 1983  slopes (844) NWI classification: None  Yes No X* (If no, explain in Remarks)  cantly disturbed? Are "Normal Circumstances" present? Yes X No  ally problematic? (If needed, explain any answers in Remarks.)  pling point locations, transects, important features, etc.  Is the Sampled Area
Landform (hillslope, terrace, etc.): Channel  Subregion (LRR): B, Columbia/Snake River Plateau Lat: 47.06  Soil Map Unit Name: Metmill very gravelly ashy loam, 0 to 5 percent Are climatic / hydrologic conditions on the site typical for this time of year?  Are Vegetation ,Soil , or Hydrology signification significant	Local relief (concave, convex, none): Concave Slope (%): 2  4516 Long: -120.583705 Datum: NAD 1983  slopes (844) NWI classification: None  Yes No X* (If no, explain in Remarks)  cantly disturbed? Are "Normal Circumstances" present? Yes X No  ally problematic? (If needed, explain any answers in Remarks.)  pling point locations, transects, important features, etc.  Is the Sampled Area
Soil Map Unit Name: Metmill very gravelly ashy loam, 0 to 5 percent Are climatic / hydrologic conditions on the site typical for this time of year?  Are Vegetation ,Soil , or Hydrology signification of the very gravelly ashy loam, 0 to 5 percent of the site of year?  Are Vegetation ,Soil , or Hydrology nature of year of the vegetation	A516 Long: -120.583705 Datum: NAD 1983  slopes (844) NWI classification: None  Yes No X* (If no, explain in Remarks)  cantly disturbed? Are "Normal Circumstances" present? Yes X No  ally problematic? (If needed, explain any answers in Remarks.)  pling point locations, transects, important features, etc.  Is the Sampled Area
Soil Map Unit Name: Metmill very gravelly ashy loam, 0 to 5 percent Are climatic / hydrologic conditions on the site typical for this time of year?  Are Vegetation ,Soil , or Hydrology signiff Are Vegetation ,Soil , or Hydrology natura  SUMMARY OF FINDINGS – Attach site map showing same Hydrophytic Vegetation Present? Yes X No Hydric Soil Present? Yes X No Wetland Hydrology Present? Yes X No Precipitation prior to fieldwork: 0.70" two weeks prior, 2.30" above normal Remarks:  FW01. Wetland extends off-site to the west and north onto heavily grazed and VEGETATION  Absolute Doming Tree Stratum (Plot size: 30' r ) % Cover Special Spe	Yes No X* (If no, explain in Remarks) cantly disturbed? Are "Normal Circumstances" present? Yes X No illy problematic? (If needed, explain any answers in Remarks.)  pling point locations, transects, important features, etc.  Is the Sampled Area
Are climatic / hydrologic conditions on the site typical for this time of year?  Are Vegetation	Yes No X* (If no, explain in Remarks) cantly disturbed? Are "Normal Circumstances" present? Yes X No ally problematic? (If needed, explain any answers in Remarks.)  pling point locations, transects, important features, etc.  Is the Sampled Area
Are Vegetation ,Soil , or Hydrology natura  SUMMARY OF FINDINGS - Attach site map showing sam  Hydrophytic Vegetation Present? Yes X No Hydric Soil Present? Yes X No Wetland Hydrology Present? Yes X No  Precipitation prior to fieldwork: 0.70" two weeks prior, 2.30" above normal Remarks:  FW01. Wetland extends off-site to the west and north onto heavily grazed and  VEGETATION  Absolute Doming the Stratum (Plot size: 30' r ) % Cover Spectors  1. 2. 3. 4.	pling point locations, transects, important features, etc.  Is the Sampled Area
SUMMARY OF FINDINGS — Attach site map showing same Hydrophytic Vegetation Present? Yes X No Hydric Soil Present? Yes X No Wetland Hydrology Present? Yes X No Precipitation prior to fieldwork: 0.70" two weeks prior, 2.30" above normal Remarks:  FW01. Wetland extends off-site to the west and north onto heavily grazed and VEGETATION  Absolute Doming Tree Stratum (Plot size: 30' r ) % Cover Specific	Is the Sampled Area
Hydrophytic Vegetation Present?  Hydric Soil Present?  Yes X No  Wetland Hydrology Present?  Yes X No  Precipitation prior to fieldwork:  Remarks:  FW01. Wetland extends off-site to the west and north onto heavily grazed and the stratum (Plot size: 30' r)  1. 2. 3. 4.	Is the Sampled Area
Hydric Soil Present?  Wetland Hydrology Present?  Precipitation prior to fieldwork:  Remarks:  FW01. Wetland extends off-site to the west and north onto heavily grazed and the stratum  WEGETATION  Absolute  Domi  Tree Stratum  (Plot size: 30' r )  3.  4.  2.  3.  4.  Precipitation prior to fieldwork:  O.70" two weeks prior, 2.30" above normal above normal prior to fieldwork:  Absolute  Domi  % Cover  Spec  0% = Total Cover  Sapling/Shrub Stratum  (Plot size: 10' r )  Rosa nutkana  7% Yee  3.	
Wetland Hydrology Present?  Precipitation prior to fieldwork: 0.70" two weeks prior, 2.30" above normal Remarks:  FW01. Wetland extends off-site to the west and north onto heavily grazed and the stratum (Plot size: 30' r )	
Precipitation prior to fieldwork: 0.70" two weeks prior, 2.30" above normal Remarks:  FW01. Wetland extends off-site to the west and north onto heavily grazed and vertical prior of the west and north onto heavily gra	within a Wetland? Yes X No
Remarks: FW01. Wetland extends off-site to the west and north onto heavily grazed and VEGETATION    Absolute   Domi   Modern   Mo	
VEGETATION           Absolute         Doming           1.         % Cover         Spec           1.         3.         4.           4.         0%         = Total Cover           Sapling/Shrub Stratum         (Plot size: 10' r )         7%         Ye           1.         Rosa nutkana         7%         Ye           3.         3.         3.         3.         3.         3.	al for CYTD, 2.76" above normal for WYTD. *Wetter than normal.
Absolute   Domi	eas. Slope wetland that flows down hill in a vegetated channel.
Tree Stratum         (Plot size: 30' r )         % Cover Spec           1.         2.         3.           4.         0% = Total Cover           Sapling/Shrub Stratum         (Plot size: 10' r )           1.         Rosa nutkana         7% Yee           2.         3.	
1. 2. 3. 4.	
2. 3. 4.	
3.	That Are OBL, FACW, or FAC:3(A)
4	
0%	Total Number of Dominant
Sapling/Shrub Stratum         (Plot size: 10' r )           1. Rosa nutkana         7%         Ye           2.         3.	Species Across All Strata: 4 (B)
1. Rosa nutkana 7% Ye 2. 3.	
2. 3.	Percent of Dominant Species
3.	s FACU That Are OBL, FACW, or FAC: 75% (A/B)
	Prevalence Index worksheet:
4	Total % Cover of:Multiply by:
4	OBL species 0 x 1 = 0
5	FACW species 23 x 2 = 46
7% = Total Cove	
<u>Herb Stratum</u> (Plot size: <u>5' r</u> )	FACU species 27 x 4 = 108
1. Dipsacus fullonum 25% Ye	`
2. Phalaris arundinacea 20% Ye	S FACW Column Totals: 107 (A) 335 (B)
3. Carex species 20% Ye	s FAC ? Prevalence Index = B/A = 3.13
4. Lactuca serriola 10% No	
5. Schedonorus arundinaceus 7% No	5 FACU 1 - Rapid Test for Hydrophytic Vegetation
6. Barbarea vulgaris 5% No	1 - Rapid Test for Hydrophytic Vegetation
7. Epilobium brachycarpum 5% No	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
8. Juncus balticus 3% No	FAC X 2 - Dominance Test is >50%
9. Cirsium arvense 3% No	FAC X 2 - Dominance Test is >50%  NOL 3 - Prevalence Index is ≤3.0¹
10. Rumex crispus 2% No	FAC X 2 - Dominance Test is >50%  NOL 3 - Prevalence Index is ≤3.0¹  FACW 4 - Morphological Adaptations¹ (Provide supporting
11.	FAC  X 2 - Dominance Test is >50%  NOL  3 - Prevalence Index is ≤3.0¹  4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
(Plot eight 10' r )	FAC X 2 - Dominance Test is >50%  NOL 3 - Prevalence Index is ≤3.0¹  FACW 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
Woody Vine Stratum (Plot size: 10' r )	FAC  X 2 - Dominance Test is >50%  NOL  3 - Prevalence Index is ≤3.0¹  4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)  FAC  FAC  FAC  FAC  FAC  FAC  FAC  FA
1	FAC  X 2 - Dominance Test is >50%  NOL  3 - Prevalence Index is ≤3.0¹  4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)  FAC  FAC  5 - Wetland Non-Vascular Plants¹  Problematic Hydrophytic Vegetation¹ (Explain)
0% = Total Cov	FAC  X 2 - Dominance Test is >50%  NOL  3 - Prevalence Index is ≤3.0¹  4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)  FAC  FAC  FAC  FAC  FAC  FAC  FAC  FA
% Bare Ground in Herb Stratum 0%	FAC  NOL  3 - Prevalence Index is ≤3.0¹  4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)  FAC  FAC  5 - Wetland Non-Vascular Plants¹  Problematic Hydrophytic Vegetation¹ (Explain)  ¹Indicators of hydric soil and wetland hydrology must be present.  Hydrophytic
Remarks:	FAC  NOL  3 - Prevalence Index is ≤3.0¹  4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)  FAC  FAC  5 - Wetland Non-Vascular Plants¹  Problematic Hydrophytic Vegetation¹ (Explain)  ¹Indicators of hydric soil and wetland hydrology must be present.  Hydrophytic

Profile Descrip	otion: (Describe t	to the depth	needed to docu	ment the indicator	or confirm	the absence o	f indicators.)	11. 11 01			
Depth	Mat	trix		Redox Fe	eatures						
(inches)	Color (moist)	%	Color (mois		Type <sup>1</sup>	Loc <sup>2</sup>	— Texture	Remarks			
0-5	10YR 2/2	100		<u> </u>			SiL				
5-12	10YR 2/1	97	7.5YR 4/	<del>3</del>	С	PL	SiCL				
							_				
				=Covered or Coated	Sand Grain		: PL=Pore Lining, M=M	•			
Hydric Soil Indi	icators: (Applicat	ole to all LRF	ts, unless other	wise noted.)			for Problematic Hydri	c Soils <sup>3</sup> :			
Histosol (A1			Sandy Red	, ,			k (A9) ( <b>LRR C</b> )				
Histic Epipe			Stripped Ma				k (A10) ( <b>LRR B</b> )				
Black Histic	` '			ky Mineral (F1)			/ertic (F18)				
Hydrogen S		_		yed Matrix (F2)			nt Material (TF2)				
_	ayers (A5) (LRR C	)	Depleted M			Other (Exp	olain in Remarks)				
	(A9) ( <b>LRR D</b> )		X Redox Dark	,							
	elow Dark Surface	(A11)		ark Surface (F7)		31		d			
	Surface (A12)			ressions (F8)			hydrophytic vegetation a	na			
_	ky Mineral (S1)		Vernal Poo	ls (F9)		_	wetland hydrology must be present, unless distrubed or problematic.				
Sandy Gley	ed Matrix (S4)					unless distri	ubed or problematic.				
Restrictive Lay	er (if present):										
Type:	None										
Depth (inches	):N/A	_				Hydric Soil P	resent? Yes X	No			
				co = coarse; f = fine	; vf = very fi	ne; + = heavy (	more clay); - = light (less	clay)			
Large rocks pres	sent in 5-12" layer.	. Shoval refus	al at 12".								
HYDROLOG	Y										
	logy Indicators:										
Primary Indicato	ors (minimum of or	ne required; c	heck all that appl	y)		Secondary	/ Indicators (2 or more re	equired)			
Surface Wa	iter (A1)		Salt Crust (	B11)			Water Marks (B1) ( <b>Ri</b>	<del></del>			
High Water			Biotic Crust				Sediment Deposits (E	,			
Saturation (				ertebrates (B13)			Drift Deposits (B3) (R				
<u> </u>	s (B1) <b>(Nonriveri</b> r	ne)		Sulfide Odor (C1)		X	Drainage Patterns (B	•			
<del></del>	eposits (B2) (Non			nizospheres along L	iving Roots (	(C3)	Dry-Season Water Ta	•			
<del></del>	its (B3) (Nonriveri			f Reduced Iron (C4)	_	· ′	Crayfish Burrows (C8				
Surface Soi	l Cracks (B6)			Reduction in Tilled			Saturation Visible on				
Inundation \	√isible on Aerial In	nagery (B7)	Thin Muck	Surface (C7)			Shallow Aquitard (D3)	)			
Water-Stain	ned Leaves (B9)		Other (Expl	ain in Remarks)			FAC-Neutral Test (D5	)			
Field Observati	ions:						_				
Surface Water		2	No X	Depth (inches):	N/A						
Water Table Pr			No X	Depth (inches):	>12	- Wetla	nd Hydrology Present?	•			
Saturation Pres			No X	Depth (inches):	>12	-	Yes X	No			
(includes capilla			//	[5 (101100).		-					
Describe Recor	ded Data (stream	gauge, monit	oring well, aerial	photos, previous ins	pections), if	available:					
Pomorko:							Entored by: VI /ED	OC by: TID			
Remarks:							Entered by: KL/ED	QU DY. 10D			
								<u> </u>			

Project/Site: Fr	umaria Solar Project		City/County:	- / Kittitas	Sampling Da	te: 4/5/2017
Applicant/Owner:	TUUSSO Energy, LLC		<u> </u>		State: WA Samplin	g Point: <b>FP02</b>
Investigator(s):	Evan Dulin, Jamie Young		Section, T	ownship, Rang	ge: Section 09, T18N, R18E	
Landform (hillslope,	, terrace, etc.): Hillslope			Local relief	(concave, convex, none): Convex	Slope (%): 20
Subregion (LRR):	B, Columbia/Snake River Pl	ateau	Lat: 47.064508	Lon	ng:120.583637	m: NAD 1983
Soil Map Unit Nam	ne: Metmill very grave	elly ashy loam, 0	to 5 percent slopes	s (844)	NWI classification:	None
Are climatic / hydr	ologic conditions on the site t	ypical for this tim	•	Υe		xplain in Remarks)
Are Vegetation		, or Hydrology			Are "Normal Circumstances" present?	
Are Vegetation	,Soil	, or Hydrology	naturally pro		(If needed, explain any answers in Re	
		•		point locat	tions, transects, important f	eatures, etc.
Hydrophytic Vege		Yes	No X	Is the Samp	alad Aras	
Hydric Soil Prese		Yes	No X	within a We	otland?	V
Wetland Hydrolog		Yes	No X		TesNO	
Precipitation prior Remarks:	to fieldwork: U.70" two w	eeks prior, 2.30°	above normal for C	, Y I D, 2.76° abo	ove normal for WYTD. *Wetter than r	iormai.
VEGETATION						
		Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum	(Plot size: <u>30' r</u> )	% Cover	Species?	<u>Status</u>	Number of Dominant Species	
1		_	<u> </u>		That Are OBL, FACW, or FAC:	1 (A)
2.		_				
3.		_			Total Number of Dominant	
4.		_	<u> </u>		Species Across All Strata:	3 (B)
		0%	= Total Cover			
Sapling/Shrub Stra	atum (Plot size: 10' r	)			Percent of Dominant Species	
1. Rosa nutkana	ì	5%	Yes	FACU	That Are OBL, FACW, or FAC:	33% (A/B)
2.		_	<u> </u>		Prevalence Index worksheet:	
3.		_			Total % Cover of: Multiply	by:
4		_			OBL species 0 x 1 =	0
5		_			FACW species 0 x 2 =	0
		5%	= Total Cover		FAC species 35 x 3 =	105
<u>Herb Stratum</u>	(Plot size: <u>5' r</u> )				FACU species 50 x 4 =	200
Barbarea vulg	garis	30%	Yes	FAC	UPL species 20 x 5 =	100
2. Crocidium mu	ılticaule	20%	Yes	NOL	Column Totals: 105 (A)	405 (B)
<ol><li>Lactuca serric</li></ol>	ola	15%	No	FACU	Prevalence Index = B/A =	<u>3.86</u>
4. Achillea millei	folium	10%	No	FACU	Hydrophytic Vegetation Indicate	ors:
<ol><li>Cichorium inty</li></ol>	ybus	10%	No	FACU	1 - Rapid Test for Hydrophytic	Vegetation
6. Schedonorus	arundinaceus	10%	No	FACU	2 - Dominance Test is >50%	
7. <u>Dipsacus fullo</u>	onum	5%	No	FAC	3 - Prevalence Index is ≤3.0 <sup>1</sup>	
8.		_			4 - Morphological Adaptations	<sup>1</sup> (Provide supporting
9.		_			data in Remarks or on a se	eparate sheet)
10		_			5 - Wetland Non-Vascular Pla	nts <sup>1</sup>
11		_			Problematic Hydrophytic Vege	etation <sup>1</sup> (Explain)
	(DI-1-1 40)	100%	= Total Cover		<sup>1</sup> Indicators of hydric soil and wetla	and hydrology must
Woody Vine Stratu	<u>um</u> (Plot size: <u>10' r</u>	_)			be present.	
1. 2.					Hydrophytic	
<u> </u>		0%	= Total Cover			No X
% Bare Ground in	Herb Stratum 0%		10101 00101		Present?	
Remarks:	1.010 0.10.0111 0 /0				Entered by: KL/ED	OC by: TID
inciliains.					Lillered by. KL/ED	QC Dy. 10D

Profile Descrip	ption: (Describe t	to the depth	needed to docu	ument the indicator	or confirm	the absence of in	dicators.)	n. 1102	
Depth	Mat	trix		Redox F	eatures				
(inches)	Color (moist)	%	Color (moi		Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks	
0-3	10YR 2/2	100					SiL		
3	10YR 4/2	100					Sand		
3-12	10YR 2/2	99	7.5YR 4	/6 1	С	M	SiL		
			_						
				S=Covered or Coated	d Sand Grain	s. <sup>2</sup> Location: F	PL=Pore Lining, M=Ma	atrix.	
Hydric Soil Ind	licators: (Applicat	ole to all LRF	Rs, unless othe	rwise noted.)			or Problematic Hydri	c Soils <sup>3</sup> :	
Histosol (A	1)		Sandy Red	dox (S5)		1 cm muck (A			
Histic Epipe	edon (A2)		Stripped M	latrix (S6)		2 cm Muck (A	A10) ( <b>LRR B</b> )		
Black Histic (A3) Loamy Mucky Mineral (F1)						Reduced Ver	tic (F18)		
Hydrogen S			Loamy Gle	eyed Matrix (F2)		Red Parent M	Naterial (TF2)		
	ayers (A5) ( <b>LRR C</b> )	)	Depleted N	Matrix (F3)		Other (Explai	n in Remarks)		
	(A9) ( <b>LRR D</b> )			rk Surface (F6)					
	elow Dark Surface	(A11)		Dark Surface (F7)		3			
_	Surface (A12)			pressions (F8)		<sup>3</sup> Indicators of hydrophytic vegetation and			
_	ky Mineral (S1)		Vernal Poo	ols (F9)		-	ogy must be present,		
Sandy Gley	ed Matrix (S4)					unless distrube	d or problematic.		
Restrictive Lay	er (if present):								
Type:	None			_					
Depth (inches	s): N/A	_				Hydric Soil Pres	ent? Yes	NoX	
Remarks:	S = sand; Si = silt	; C = clay; L :	= loam or loamy	; co = coarse; f = fine	e; vf = very fi	ne; + = heavy (mo	re clay); - = light (less	clay)	
Very large rocks	s throughout. Shov	el refusal at 1	12". Thin soil lay	er at 3" that has coa	rse sand mix	ed in.			
HYDROLOG	<u> </u>								
	logy Indicators:								
_	ors (minimum of on	ne required; c	heck all that app	oly)		Secondary In	dicators (2 or more re	equired)	
Surface Wa	ater (A1)		Salt Crust	(B11)		-	Water Marks (B1) ( <b>Ri</b>	-	
High Water			Biotic Crus				Sediment Deposits (B	,	
Saturation (				vertebrates (B13)			Orift Deposits (B3) (R		
<u> </u>	ks (B1) <b>(Nonriveri</b> r	ne)		Sulfide Odor (C1)			Drainage Patterns (B	•	
	Deposits (B2) (Non			Rhizospheres along L	iving Roots (		Dry-Season Water Ta	•	
<del></del>	its (B3) (Nonriveri	,		of Reduced Iron (C4)			Crayfish Burrows (C8)		
	il Cracks (B6)	,		n Reduction in Tilled			Saturation Visible on A		
_	Visible on Aerial In	nagery (B7)		Surface (C7)	,		Shallow Aquitard (D3)		
Water-Stair	ned Leaves (B9)	0 , ( ,		olain in Remarks)			FAC-Neutral Test (D5		
Field Observat	ions:			,			· · · · · · · · · · · · · · · · · · ·	,	
Surface Water			No X	Depth (inches):	N/A				
Water Table Pr			No X	Depth (inches):		- Wetland	Hydrology Present?	)	
	eseni ( Yes		110 /	_		-	riyarology r resent.		
			No X	Denth (inches):	>12		Yes	No X	
Saturation Pres	sent? Yes		No X	Depth (inches):	>12	_	Yes	No X	
Saturation Pres	sent? Yes ary fringe)	<u> </u>		Depth (inches):		available:	Yes	No <u>X</u>	
Saturation Pres (includes capilla Describe Recor	sent? Yes ary fringe)	<u> </u>		_					
Saturation Pres	sent? Yes ary fringe)	<u> </u>		_			YesEntered by: KL/ED		

Project/Site: Fr	umaria Solar Project		City	//County:	- / Kittitas		Sampling Dat	e: 4/6/2017	7
Applicant/Owner:	TUUSSO Energy, LLC					State: WA	Sampling	Point:	FP03
Investigator(s):	Evan Dulin, Jamie Young		S	Section, To	wnship, Rang	e: Section 09, T18N,	R18E		
Landform (hillslope,	, terrace, etc.): Hillslope				Local relief	(concave, convex, none)	None	Slope (%):	: 3
Subregion (LRR):	B, Columbia/Snake River P	lateau	Lat: 47.0	058695	Lon	g: -120.583140	Datur	n: NAD 198	83
Soil Map Unit Nam			2 to 5 perc	ent slopes	s (822)	NWI	classification: N	lone	
Are climatic / hydr	ologic conditions on the site	typical for this tin	ne of year?	•	Ye	s No	X* (If no, ex	plain in Rei	marks)
Are Vegetation	,Soil	_ , or Hydrology	sigr	nificantly d	isturbed? A	Are "Normal Circumsta	ances" present?	Yes X	No
Are Vegetation	,Soil	_, or Hydrology	nati	urally prob	lematic? (	If needed, explain any	answers in Rer	narks.)	
SUMMARY O	F FINDINGS – Attach	site map sho	wing sa	mpling	point locat	ions, transects,	important fe	atures, e	∍tc.
Hydrophytic Vege	etation Present?	Yes	No	X					
Hydric Soil Prese	nt?	Yes	No	X	Is the Samp				
Wetland Hydrolog	gy Present?	Yes	No	X	within a We	tland? Yes	No _	X	
Precipitation prior Remarks:	to fieldwork: 0.70" two v	veeks prior, 2.30'	' above nor	mal for C\	/TD, 2.76" abo	ove normal for WYTD	. *Wetter than no	ormal.	
VEGETATION									
		Absolute	Doi	minant	Indicator	Dominance Test	worksheet:		
Tree Stratum	(Plot size: <u>30' r</u> )	% Cover	Spe	ecies?	<u>Status</u>	Number of Domina	ant Species		
1.		_				That Are OBL, FA	CW, or FAC:	1	(A)
2.		_					_		_
3.		_				Total Number of D	ominant		
4.		_				Species Across All	l Strata:	3	(B)
		0%	= Total Co	over			_		
Sapling/Shrub Stra	atum (Plot size: <u>10' r</u>	)	_			Percent of Domina	int Species		
1.						That Are OBL, FA	CW, or FAC:	33%	(A/B)
2.						Prevalence Index	•		( ' /
3.						Total % Cove		oy:	
4.		_				OBL species	0 x 1 =	0	
5.		_				FACW species	0 x 2 =	0	
		0%	= Total Co	over		FAC species	30 x 3 =	90	
Herb Stratum	(Plot size: 5'r)			3701		FACU species	30 x 4 =	120	
1. Poa species		20%	,	Yes	FAC ?	UPL species	36 x 5 =	180	
Hypochaeris i	radicata	20%		Yes	FACU	Column Totals:	96 (A)	390	
3. Draba verna	adicata	20%		Yes	NOL	Prevalence Ind	. ,	4.06	(=)
Lactuca serrice		10%		No	FACU	Hydrophytic Vege	-		
5. Aristida purpu		10%		No	NOL		for Hydrophytic		
				No	FAC	2 - Dominance	, , ,	vogotation	
						3 - Prevalence			
	,	5%		No No	FAC		rindex is ≤3.0 cal Adaptations¹	(Dravida a	unnartina
				No No	NOL	<u> </u>	cai Adaptations narks or on a se	`	
9. Fritillaria pudi	ca	3%	_	No	NOL		,	' .	<i>31)</i>
10.			_			<u> </u>	on-Vascular Plar		
11.			- <u>-</u>			<del> </del>	ydrophytic Vege		
Moody Vina Strati	um (Plot size: 10' r	96%	= Total Co	over		<sup>1</sup> Indicators of hydri	c soil and wetlar	na nydrolog	y must
Woody Vine Strate  1.	ulli (1.101.3123. <u>10.1</u>	/				be present.			
2.		_				Hydrophytic			
		0%	= Total Co	over		Vegetation	Yes M	lo X	
% Bare Ground in	Herb Stratum 4%		-			Present?			-
Remarks:						Enter	ed by: KL/ED	OC by: T.IF	)
omano.						Litter	·		

Profile Descript	tion: (Describe t	o the depth	needed	to docum	ent the inc	licator o	confirm	the absence of	Sampling Pol	nt: FPU3	
•	Matı	•		to docum		edox Fea			maioatoroi,		
Depth (inches)	Color (moist)	%		olor (moist)	%		Type <sup>1</sup>	Loc <sup>2</sup>	- Texture	Remarks	
0-10	10YR 3/2	100		oloi (IIIoist)			Турс		SL	Remarks	
10-13	10YR 3/3	100			_				SCL	-	
10-13	10113/3	100			_			-	GCL		
	·				_				-		
	·				_				-		
					_						
_					_			_			
					_				-	-	
<sup>1</sup> Type: C=Conce	ntration, D=Deple	tion RM=Re	educed N	Matrix CS=0	Covered or	Coated S	and Grain	s <sup>2</sup> l ocation:	PL=Pore Lining, M=M	atrix	
	cators: (Applicab						<u> </u>		for Problematic Hydr	•	
Histosol (A1)				andy Redox					(A9) ( <b>LRR C</b> )		
Histic Epiped				ripped Mat	` '				(A10) ( <b>LRR B</b> )		
Black Histic	* *				y Mineral (F	-1)		Reduced Ve			
Hydrogen Su	` ,			-	ed Matrix (F.				Material (TF2)		
	/ers (A5) ( <b>LRR C</b> )		epleted Ma		,			ain in Remarks)			
1 cm Muck (			•	Surface (F6	)			,			
	low Dark Surface	(A11)			k Surface (	•					
· Thick Dark S			ssions (F8)			<sup>3</sup> Indicators of h	ydrophytic vegetation a	and			
Sandy Muck	y Mineral (S1)	Vernal Pools (F9)					wetland hydrology must be present,				
Sandy Gleye						unless distrubed or problematic.					
Restrictive Laye	r (if present):								·		
_	None										
Depth (inches):								Hydric Soil Pre	esent? Yes	No X	
		- - C = alavii l	_			£ _ £	£				
Remarks: S	5 = sand; 5i = siit;	C = clay; L	= ioam c	or loarny; c	o = coarse;	r = rine; v	n = very iii	ne; + = neavy (m	ore clay); - = light (les	s clay)	
HYDROLOGY											
Wetland Hydrolo	ogy Indicators:										
Primary Indicator	s (minimum of on	e required; c	heck all	that apply	)			<u>Secondary</u>	Indicators (2 or more r	equired)	
Surface Wat	er (A1)		Sa	alt Crust (B	11)			-	Water Marks (B1) (R	iverine)	
High Water 1	Γable (A2)		Bid	otic Crust (	B12)			-	Sediment Deposits (E	32) (Riverine)	
Saturation (A	<b>N3</b> )		Ac	quatic Inver	tebrates (B	13)		-	Drift Deposits (B3) (R	Riverine)	
Water Marks	(B1) (Nonriverin	ie)	Ну	/drogen Su	lfide Odor (	C1)			Drainage Patterns (B	10)	
Sediment De	eposits (B2) (Noni	riverine)	O	kidized Rhiz	zospheres a	along Livi	ng Roots (	C3)	Dry-Season Water Ta	able (C2)	
Drift Deposits	s (B3) ( <b>Nonriveri</b>	ne)	Pr	esence of	Reduced Iro	on (C4)			Crayfish Burrows (C8	5)	
Surface Soil	Cracks (B6)		Re	ecent Iron F	Reduction in	Tilled S	oils (C6)		Saturation Visible on	Aerial Imagery (C9)	
Inundation V	isible on Aerial Im	nagery (B7)	Th	nin Muck Sı	urface (C7)			Shallow Aquitard (D3)			
Water-Staine	ed Leaves (B9)		Ot	her (Explai	n in Remar	ks)			FAC-Neutral Test (D	5)	
Field Observation	ons:										
Surface Water P	resent? Yes	·	No	Х	Depth (in	ches):	N/A	_			
Water Table Pre	sent? Yes		No	Х	Depth (in	ches):	>15	Wetlan	d Hydrology Present	?	
Saturation Prese			No	Χ	Depth (in	ches):	>15	_	Yes	No X	
(includes capillar											
Describe Record	led Data (stream	gauge, moni	toring we	ell, aerial p	hotos, prev	ious insp	ections), if	available:			
Remarks:									Entered by: KL/ED	QC by: TJD	
Snow mold.									,	<u> </u>	

Project/Site: F	umaria Solar Project		City/County:	- / Kittitas	Sampling Date: 4/6/2017
Applicant/Owner:	TUUSSO Energy, LLC				State: WA Sampling Point: FP04
Investigator(s):	Evan Dulin, Jamie Young		Section, T	ownship, Rang	ge: Section 09, T18N, R18E
Landform (hillslope	, terrace, etc.): Hillslope		<del>.</del>	Local relief	(concave, convex, none): None Slope (%): 2
Subregion (LRR):	B, Columbia/Snake River Pl	ateau	Lat: 47.058185	Lon	ng: <u>-120.582609</u> Datum: <u>NAD 1983</u>
Soil Map Unit Nan	ne: Reeser-Reelow-S	Sketter complex, 2	2 to 5 percent slope	s (822)	NWI classification: None
Are climatic / hydr	rologic conditions on the site t	ypical for this tim	e of year?	Υe	esNoX* (If no, explain in Remarks)
Are Vegetation		_, or Hydrology			Are "Normal Circumstances" present? Yes X No
Are Vegetation	,Soil	_, or Hydrology	naturally prol	,	(If needed, explain any answers in Remarks.)
		site map sho		point locat	tions, transects, important features, etc.
Hydrophytic Vege		Yes	No <u>X</u>	la tha Caman	alad Avaa
Hydric Soil Prese		Yes	No X	Is the Samp	4110
Wetland Hydrolog		Yes	No X		Tes NO X
Precipitation prior Remarks:	to fieldwork: 0.70" two w	eeks prior, 2.30"	above normal for C	YTD, 2.76" abo	ove normal for WYTD. *Wetter than normal.
	on slope towards willow thick	ket and ditch. Ove	errun by Bromus ted	ctorum.	
			-		
VEGETATION					
Tue a Chuehiina	(D) ( ; 00)	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	(Plot size: <u>30' r</u> )	% Cover	Species?	<u>Status</u>	Number of Dominant Species
1.		_			That Are OBL, FACW, or FAC:1 (A)
2.		_			
3.		_			Total Number of Dominant
4.		_			Species Across All Strata: 2 (B)
Conline/Chrub Ctr	otum (District 40)		= Total Cover		
Sapling/Shrub Str	atum (Plot size: 10' r	)			Percent of Dominant Species
1.		_			That Are OBL, FACW, or FAC: 50% (A/B)
2.		_			Prevalence Index worksheet:
3.		_			Total % Cover of: Multiply by:
4.		_			OBL species 0 x 1 = 0
5.		_			FACW species 0 x 2 = 0
	(Diet eizer Ein )	0%	= Total Cover		FAC species 30 x 3 = 90
Herb Stratum	(Plot size: <u>5' r</u> )				FACU species 5 x 4 = 20
1. Bromus tecto	rum	50%	Yes	NOL	UPL species 60 x 5 = 300
2. Poa species		30%	Yes	FAC ?	Column Totals: 95 (A) 410 (B)
3. <u>Tragopogon o</u>		5%	No No	NOL	Prevalence Index = B/A = 4.32
4. Fritillaria pudi		5%	No No	NOL	Hydrophytic Vegetation Indicators:
5. <u>Lactuca serrio</u>	ola	5%	No	FACU	1 - Rapid Test for Hydrophytic Vegetation
6.					2 - Dominance Test is >50%
7.					3 - Prevalence Index is ≤3.0¹
8.					4 - Morphological Adaptations <sup>1</sup> (Provide supporting
9.					data in Remarks or on a separate sheet)
10.		_			5 - Wetland Non-Vascular Plants <sup>1</sup>
11.					Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
Moody Vine Chris	ıım (Plot size: <u>10' r</u>		= Total Cover		<sup>1</sup> Indicators of hydric soil and wetland hydrology must
Woody Vine Strate  1.	uiii (i iot 5126. <u>10 1</u>	/			be present.
2.		<del>-</del>			Hydrophytic
		0%	= Total Cover		Vegetation Yes No X
% Bare Ground in	Herb Stratum 5%				Present?
Remarks:		<del></del>			Entered by: KL/ED QC by: TJD
					· <u>——</u>

<b>————</b>	otion: (Describe to	o the depth	needed to doci	ument the inc	dicator o	r confirm	the absen	ce of in		inc. II C	· <del></del>
Depth	Matı	ix		R	edox Fea	tures					
(inches)	Color (moist)	%	Color (moi			Type <sup>1</sup>	Lo	oc <sup>2</sup>	Texture		Remarks
0-11	10YR 3/2	100							SL		
11-13	10YR 3/3	100							SCL		
Type: C=Concentration. D=Depletion. RM=Reduced Matrix CS=Covered or Coated Sand Grains.   **Location: PL=Pore Lining, M=Matrix.											
<sup>1</sup> Type: C=Conc	entration, D=Deple	tion, RM=Re	duced Matrix CS	S=Covered or	Coated S	and Grain	s. <sup>2</sup> Loc	ation: P	PL=Pore Lining, M=N	/latrix.	
Hydric Soil Indi	icators: (Applicab	le to all LRF	Rs, unless othe	rwise noted.)	)		Indic	ators fo	r Problematic Hyd	ric Soils	s <sup>3</sup> :
Histosol (A1	1)		Sandy Red	dox (S5)			1 cm	muck (A	(49) ( <b>LRR C</b> )		
Histic Epipe	edon (A2)		Stripped M	latrix (S6)			2 cm	Muck (A	(10) ( <b>LRR B</b> )		
Black Histic	(A3)		Loamy Mu	cky Mineral (f	<del>-</del> 1)		Redu	ced Verl	tic (F18)		
Hydrogen S	sulfide (A4)		Loamy Gle	eyed Matrix (F	2)		Red F	Parent M	laterial (TF2)		
Stratified La	ayers (A5) (LRR C)		Depleted N	Matrix (F3)			Other	(Explair	n in Remarks)		
1 cm Muck	(A9) ( <b>LRR D</b> )		Redox Dai	k Surface (F6	5)						
Depleted Be	elow Dark Surface	(A11)	Depleted [	Dark Surface (	(F7)						
Thick Dark	Surface (A12)		Redox De	oressions (F8	)		<sup>3</sup> Indicator	s of hyd	rophytic vegetation	and	
Sandy Mucl	ky Mineral (S1)		Vernal Poo	ols (F9)			wetland hydrology must be present,				
Sandy Gley	ed Matrix (S4)			unless distrubed or problematic.							
Restrictive Lay	er (if present):										
Type:	None			_							
Depth (inches	): N/A	_		-			Hydric S	oil Pres	ent? Yes	No	X
Remarks:	S = sand; Si = silt;	C = clay; L :	= loam or loamy	; co = coarse;	f = fine;	/f = very fir	ne; + = hea	avy (mor	re clay); - = light (les	s clay)	
LIVEROLOG	V										
1		e required; c	heck all that app	oly)			Seco	ndary Ind	dicators (2 or more	required	)
		1 /						-			
<del></del>	, ,						_				
_					:13)						
<u> </u>	•	۵)					_				;)
<del></del>					,	na Roots (	(C3)				2)
<del></del>					_	ng rtoots (	_		-		-)
		.0)				nils (C6)	_				magery (C9)
		agery (B7)				0113 (00)	_				magery (00)
		agery (Br)					_		, ,	,	
	. ,			nam in recinal	110)		<del>-</del>		710 110dilai 100t (B	<u> </u>	
				5 " "							
			_	- ' '	· -		-				
			_	_	_		-  ^	retiand			v
(includes capilla	ary fringe)			- ' '	· -		-		Yes	NO	
Describe Recor	ded Data (stream (	gauge, monit	toring well, aeria	I photos, prev	ious insp	ections), if	available:				
Remarks:								ı	Entered by: KL/ED	QC by:	TJD
Snow mold pres	ent throughout Sh	oot flower no	ttorne obcerved	The state of the state					<del></del>	-	
	chi unougnout. On	eet nower pa	allerris observed	, knocked ove	er grasses	·.					

Project/Site: Fr	umaria Solar Project		City/County:	- / Kittitas	Sampling Date: 4/6/2017
Applicant/Owner:	TUUSSO Energy, LLC				State: WA Sampling Point: FP05
Investigator(s):	Evan Dulin, Jamie Young		Section, T	ownship, Rang	ge: Section 09, T18N, R18E
Landform (hillslope,	, terrace, etc.): Terrace			Local relief	(concave, convex, none): Concave Slope (%): 1
Subregion (LRR):	B, Columbia/Snake River P	lateau	Lat: 47.057830	_ Lor	ng: -120.582936 Datum: NAD 1983
Soil Map Unit Nam	ne: Reeser-Reelow-S	Sketter complex, 2	2 to 5 percent slope	s (822)	NWI classification: None
Are climatic / hydr	ologic conditions on the site	typical for this tim	e of year?	Υe	esNoX* (If no, explain in Remarks)
Are Vegetation	,Soil	, or Hydrology	significantly		Are "Normal Circumstances" present? Yes X No
Are Vegetation	,Soil	_, or Hydrology	naturally prol		(If needed, explain any answers in Remarks.)
SUMMARY O	F FINDINGS – Attach	-	wing sampling	point locat	tions, transects, important features, etc.
Hydrophytic Vege	etation Present?	Yes X	No		
Hydric Soil Prese		Yes	No X	Is the Samp	4140
Wetland Hydrolog	*	Yes	No <u>X</u>	within a We	165 NO X
Precipitation prior	to fieldwork: 0.70" two w	eeks prior, 2.30"	above normal for C	YTD, 2.76" ab	ove normal for WYTD. *Wetter than normal.
Remarks: Sample plot taken	in willow thicket on the north	side of FS02 (dit	ch).		
VEGETATION					
		Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum	(Plot size: <u>30' r</u> )	% Cover	Species?	<u>Status</u>	Number of Dominant Species
1					That Are OBL, FACW, or FAC: 2 (A)
2					
3.					Total Number of Dominant
4.					Species Across All Strata: 3 (B)
		0%	= Total Cover		
Sapling/Shrub Stra	atum (Plot size: <u>10' r</u>	)			Percent of Dominant Species
1. Salix exigua		95%	Yes	FACW	That Are OBL, FACW, or FAC: 67% (A/B)
2					Prevalence Index worksheet:
3.					Total % Cover of: Multiply by:
4.					OBL species 0 x 1 = 0
5					FACW species 95 x 2 = 190
		95%	= Total Cover		FAC species 20 x 3 = 60
<u>Herb Stratum</u>	(Plot size: <u>5' r</u> )				FACU species 5 x 4 = 20
Bromus tector	rum	20%	Yes	NOL	UPL species 20 x 5 = 100
2. Elymus repen	ns	20%	Yes	FAC	Column Totals: 140 (A) 370 (B)
3. Lactuca serrio	ola	5%	No	FACU	Prevalence Index = B/A = 2.64
4.					Hydrophytic Vegetation Indicators:
5					1 - Rapid Test for Hydrophytic Vegetation
6.					X 2 - Dominance Test is >50%
7					3 - Prevalence Index is ≤3.0 <sup>1</sup>
8.					4 - Morphological Adaptations <sup>1</sup> (Provide supporting
9.					data in Remarks or on a separate sheet)
10					5 - Wetland Non-Vascular Plants <sup>1</sup>
11					Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
			= Total Cover		<sup>1</sup> Indicators of hydric soil and wetland hydrology must
Woody Vine Stratu	<u>um</u> (Plot size: <u>10' r</u>	)			be present.
1. 2.					Hydrophytic
		0%	= Total Cover		Vegetation Yes X No
% Bare Ground in	Herb Stratum 55%		- Total Covel		Present?
	TIOD GUALUIII 33%				
Remarks:					Entered by: KL/ED QC by: TJD

Profile Descrip	tion: (Describe	to the depth	needed to docu	ment the indicator	or confirm	the absence of	indicators.)	1703
Depth	Mat			Redox Fe			,	
(inches)	Color (moist)	%	Color (mois		Type <sup>1</sup>	Loc <sup>2</sup>	- Texture	Remarks
0-4	10YR 3/2	100					SiL	
4-13	10YR 3/2	100	_			<u> </u>	SL	ı
			_			_	·	
			_	_		_		
				<u> </u>		_		
			_					
<sup>1</sup> Type: C=Conce	entration, D=Deple	etion, RM=Re	duced Matrix CS	=Covered or Coated	Sand Grain	s. <sup>2</sup> Location:	PL=Pore Lining, M=Ma	trix.
Hydric Soil Indi	cators: (Applical	ole to all LRF	Rs, unless other	wise noted.)		Indicators	for Problematic Hydric	Soils <sup>3</sup> :
Histosol (A1	)		Sandy Red	ox (S5)		1 cm muck	(A9) ( <b>LRR C</b> )	
Histic Epipe	don (A2)		Stripped Ma	atrix (S6)		2 cm Muck	(A10) ( <b>LRR B</b> )	
Black Histic	(A3)		Loamy Mud	cky Mineral (F1)		Reduced Ve	ertic (F18)	
Hydrogen S			Loamy Gle	yed Matrix (F2)		Red Parent	Material (TF2)	
	yers (A5) (LRR C	)	Depleted M	latrix (F3)		Other (Expl	ain in Remarks)	
	(A9) ( <b>LRR D</b> )			s Surface (F6)				
	elow Dark Surface	(A11)		ark Surface (F7)		3		
_	Surface (A12)			ressions (F8)		•	/drophytic vegetation ar	d
_	ky Mineral (S1)		Vernal Poo	ls (F9)			plogy must be present,	
Sandy Gley	ed Matrix (S4)					unless distrub	ed or problematic.	
Restrictive Laye	er (if present):							
Type:	None							
Depth (inches)	): N/A	_				Hydric Soil Pre	esent? Yes	NoX
Remarks:	S = sand; Si = silt	;; C = clay; L :	= loam or loamy;	co = coarse; f = fine	; vf = very fi	ne; + = heavy (m	ore clay); - = light (less	clay)
HYDROLOG	Υ							
Wetland Hydrol								
Primary Indicato	rs (minimum of or	ne required; c	heck all that appl	y)		Secondary	Indicators (2 or more re	quired)
Surface Wa	ter (A1)		Salt Crust (	B11)			Water Marks (B1) (Riv	erine)
High Water	Table (A2)		Biotic Crus				Sediment Deposits (B2	?) (Riverine)
Saturation (	A3)		Aquatic Inv	ertebrates (B13)			Drift Deposits (B3) (Riv	verine)
Water Mark	s (B1) (Nonriveri	ne)	Hydrogen S	Sulfide Odor (C1)			Drainage Patterns (B1	0)
Sediment D	eposits (B2) (Non	riverine)	Oxidized R	hizospheres along Li	ving Roots (	(C3)	Dry-Season Water Tab	ole (C2)
Drift Deposi	ts (B3) ( <b>Nonriver</b> i	ine)	Presence of	of Reduced Iron (C4)			Crayfish Burrows (C8)	
Surface Soi	l Cracks (B6)		Recent Iron	Reduction in Tilled	Soils (C6)		Saturation Visible on A	erial Imagery (C9)
Inundation \	/isible on Aerial In	nagery (B7)	Thin Muck	Surface (C7)			Shallow Aquitard (D3)	
Water-Stain	ed Leaves (B9)		Other (Expl	ain in Remarks)			FAC-Neutral Test (D5)	
Field Observati	ons:							
Surface Water I	Present? Yes	3	No X	Depth (inches):	N/A			
Water Table Pre	esent? Yes	<u> </u>	No X	Depth (inches):	>13	Wetlan	d Hydrology Present?	
Saturation Pres	ent? Yes	<u> </u>	No X	Depth (inches):	>13	_	Yes	No X
(includes capilla			_	-		_		
Describe Recor	ded Data (stream	gauge, monit	oring well, aerial	photos, previous ins	pections), if	available:		
Remarks:							Entered by: KL/ED C	QC by: TJD
	es were present t	hroughout, bu	ut did not have si	gns of water staining	. Snow mole	d present through		

Project/Site: F	umaria Solar Project			City/County:	- / Kittitas		Sampl	ling Date: 4	/11/201	7
Applicant/Owner:	TUUSSO Energy, LLC					State: WA	S	ampling Po	int:	FP06
Investigator(s):	Evan Dulin, Jamie Young			Section, T	ownship, Rang	e: Section 09, T18N,	R18E			
Landform (hillslope	, terrace, etc.): Terrace				Local relief	(concave, convex, none	): Concav	re Slo	pe (%):	0
Subregion (LRR):	B, Columbia/Snake River Pl	ateau	Lat:	47.057739	Lon	g:120.589831		Datum: N	NAD 198	33
Soil Map Unit Nar	me: Metmill very grav	elly ashy loam,	0 to 5 p	ercent slopes	(844)	NW	I classific	ation: None	е	
Are climatic / hydr	rologic conditions on the site t	ypical for this ti	me of ye	ear?	Ye	s No	X* (I	f no, explai	n in Rer	narks)
Are Vegetation		_, or Hydrology		significantly of		re "Normal Circumst				No
Are Vegetation	,Soil	_, or Hydrology		naturally prol		f needed, explain an				
	F FINDINGS – Attach			sampling	point locat	ions, transects,	import	ant featu	ıres, e	tc.
Hydrophytic Vege		Yes X	_ No		Is the Samp	lod Aroa				
Hydric Soil Prese		Yes X	_ No		within a We	tland?	v			
Wetland Hydrolog		Yes X	_ No			163_	X	No	<del>-</del>	
Precipitation prior Remarks: <b>FW02.</b> Riverine w	retland adjacent to Reecer Cre	·	r above	normal for C	YTD, 3.10° abo	ove normal for WYTD	). "VVetter	than norm	aı.	
VEGETATION										
_		Absolute	)	Dominant	Indicator	Dominance Test	workshe	et:		
Tree Stratum	(Plot size: <u>30' r</u> )	% Cover	<u>[</u>	Species?	<u>Status</u>	Number of Domin	ant Speci	es		
1.		_				That Are OBL, FA	CW, or F	AC:	1	(A)
2.			_							
3.						Total Number of D	ominant			
4.						Species Across A	ll Strata:		1	_(B)
0 15 101 1- 04	(DI 1 1 40)	0%	_ = Tota	al Cover						
Sapling/Shrub Str	atum (Plot size: 10' r	)				Percent of Domina	ant Speci			
1.						That Are OBL, FA		7.0	00%	(A/B)
2.		_	_			Prevalence Index				
3.						Total % Cove		fultiply by:		
4.			_			OBL species		1 = _	0	
5.						FACW species		2 = _	20	
Llaula Chuaduusa	(Plot size: 5'r)	0%	_ = Tota	al Cover		FACIL and size		3 =	261	
Herb Stratum	,	050/			F40	FACU species		4 = _	12	
Elymus reper     Description in the second sec		85%		Yes	FAC	UPL species		5 = _	0	(P)
2. Persicaria lap		5%		No	FACW	Column Totals: Prevalence Inc	100 (A	· –	293	(B)
3. Cyperus escu		5%	_	No	FACW	Hydrophytic Veg	-		2.93	
Lactuca serric    Rumex crispi		3%	_	No	FACU	1 - Rapid Test			notation	
<ol> <li>Rumex crispu</li> <li>6.</li> </ol>	IS	2%	_	No	FAC	X 2 - Dominance	•		jetation	
		_	_			<b>—</b>				
7. 8.		_	_			3 - Prevalence				
9.		_	_			4 - Morpholog		on a separa		
10.			_			5 - Wetland N			11C 511CC	,t)
11.			_			Problematic H			op <sup>1</sup> (Evn	lain)
		1000/		ol Cover		<sup>1</sup> Indicators of hydr		-		
Woody Vine Strat	um (Plot size: 10' r		1018	al Cover		be present.	ic soil an	น พะแสกน ก	yurolog	y must
1.	<u> </u>	<del>-</del> -				DO PIODOIIL.				
2.			_			Hydrophytic				
		0%	_ = Tota	al Cover		Vegetation	Yes	X No		_
% Bare Ground in	Herb Stratum 0%					Present?				
Remarks:						Ente	red by: K	L/ED QC	by: TJD	)

Depth		the depth	needed to docun	nent the indicator o	r confirm t	he absence of in	dicators.)	
	Matrix	(		Redox Fea	atures			
(inches)	Color (moist)	%	Color (moist	)%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-2	7.5YR 3/2	100					SiL	Roots
2-8	10YR 3/1	96	5YR 3/4	4	С	M, PL	SiCL	
8-14	2.5Y 2.5/1	99	7.5YR 3/3	1	С	M	SL	
1						2		
	ntration, D=Depletion ators: (Applicable)			Covered or Coated	Sand Grains		L=Pore Lining, M=N	•
_	ators. (Applicable	to all Liki					•	ic soils .
Histosol (A1)	on (A2)		Sandy Redo	• •		1 cm muck (A		
Histic Epiped	• •		Stripped Mat			2 cm Muck (A		
Black Histic (	,			xy Mineral (F1)		Reduced Vert	,	
Hydrogen Su				ed Matrix (F2)		Red Parent M		
	ers (A5) ( <b>LRR C</b> )		Depleted Ma	,		Other (Explain	n in Remarks)	
1 cm Muck (A			X Redox Dark					
	ow Dark Surface (A	ATT)		rk Surface (F7)		3Indicators of byd	rophytic vegetation	and
Thick Dark S	, ,		Redox Depre	, ,		•		
Sandy Mucky			Vernal Pools	s (F9)		-	ogy must be present	,
Sandy Gleye	d Matrix (S4)					unless distrube	d or problematic.	
Restrictive Layer	r (if present):							
Type: N	lone							
Depth (inches):	N/A							
Remarks: S						Hydric Soil Pres	ent? Yes X	No
	s = sand; Si = silt; (	C = clay; L =	= loam or loamy; c	co = coarse; f = fine;	vf = very fir		-	
Thick roots in 0-2		C = clay; L =	= loam or loamy; c	co = coarse; f = fine;	vf = very fir		-	
	" layer.	C = clay; L =	= loam or loamy; c	co = coarse; f = fine;	vf = very fir		-	
HYDROLOGY	" layer.	C = clay; L =	= loam or loamy; c	o = coarse; f = fine;	vf = very fin		-	
HYDROLOGY Wetland Hydrolo Primary Indicators	gy Indicators:				vf = very fir	ne; + = heavy (mor	re clay); - = light (les	ss clay)
HYDROLOGY Wetland Hydrolo Primary Indicators	" layer.  regy Indicators: s (minimum of one		heck all that apply	)	vf = very fir	ne; + = heavy (mor	re clay); - = light (les	required)
HYDROLOGY Wetland Hydrolo Primary Indicators Surface Wate	gy Indicators: s (minimum of one er (A1)		heck all that apply	11)	vf = very fir	se; + = heavy (mor	re clay); - = light (les	required)
HYDROLOGY Wetland Hydrolo Primary Indicators Surface Wate High Water T	rygy Indicators: s (minimum of one er (A1) rable (A2)		heck all that apply Salt Crust (B	) 311) (B12)	vf = very fir	Secondary Inc	dicators (2 or more) Vater Marks (B1) (R	required) iverine) B2) (Riverine)
HYDROLOGY Wetland Hydrolo Primary Indicators Surface Water High Water T Saturation (A	rgy Indicators: s (minimum of one er (A1) fable (A2)	required; c	heck all that apply Salt Crust (B Biotic Crust (	(B12) rtebrates (B13)	vf = very fir	Secondary Inc.  Secondary Inc.  X  Expression 1.15	dicators (2 or more of Nater Marks (B1) (Resemble 1) (Balance of Nater Deposits (B3) (For the Nate of Deposits (B3) (For the	required) iverine) B2) (Riverine) Riverine)
HYDROLOGY Wetland Hydrolo Primary Indicators Surface Wate High Water T Saturation (A Water Marks	rgy Indicators: s (minimum of one er (A1) rable (A2) 3) (B1) (Nonriverine	required; c	heck all that apply Salt Crust (B Biotic Crust Aquatic Inve Hydrogen Su	(B12) rtebrates (B13)		Secondary Inc.  Secondary Inc.  X  X  C	dicators (2 or more of Vater Marks (B1) (Rediment Deposits (B3) (For Drainage Patterns (Estate of Control of C	required) iverine) B2) (Riverine) Riverine)
HYDROLOGY Wetland Hydrolo Primary Indicators Surface Water High Water T Saturation (A Water Marks Sediment De	ry gy Indicators: s (minimum of one er (A1) Table (A2) 3) (B1) (Nonriverine posits (B2) (Nonriv	required; c	heck all that apply Salt Crust (B Biotic Crust (Aquatic Inve Hydrogen Su Oxidized Rhi	) (B12) rtebrates (B13) ulfide Odor (C1) izospheres along Liv		Secondary Inc.  Secondary Inc.  X C3)  C3	dicators (2 or more of Nater Marks (B1) (Resemble of Sediment Deposits (B3) (For Dry-Season Water T	required) iverine) B2) (Riverine) Riverine) B10) able (C2)
HYDROLOGY Wetland Hydrolo Primary Indicators Surface Wate High Water T Saturation (A Water Marks Sediment De Drift Deposits	ry layer.  regy Indicators: s (minimum of one) er (A1) Table (A2) 3) (B1) (Nonriverine) posits (B2) (Nonriverine) s (B3) (Nonriverine)	required; c	Salt Crust (B Biotic Crust Inve Aquatic Inve Hydrogen St Oxidized Rhi	(B12) rtebrates (B13) ulfide Odor (C1) izospheres along Liv Reduced Iron (C4)	ring Roots ((	Secondary Inc.  Secondary Inc.  X  X  C3)  C3	dicators (2 or more of the dicators (2 or more of the dicators (B1) (R)  Water Marks (B1) (R)  Gediment Deposits (B3) (R)  Orift Deposits (B3) (R)  Orainage Patterns (E)  Ory-Season Water T  Crayfish Burrows (C8)	required) iverine) B2) (Riverine) Riverine) 310) able (C2)
HYDROLOGY Wetland Hydrolo Primary Indicators Surface Wate High Water T Saturation (A Water Marks Sediment De Drift Deposits Surface Soil (	ry layer.  regy Indicators: s (minimum of one) er (A1) rable (A2) 3) (B1) (Nonriverine) posits (B2) (Nonriverine) s (B3) (Nonriverine) Cracks (B6)	required; c	Salt Crust (B Biotic Crust Inve Aquatic Inve Hydrogen St Oxidized Rhi	) (B12) rtebrates (B13) ulfide Odor (C1) izospheres along Liv	ring Roots ((	Secondary Inc.  Secondary Inc.  X  X  C3)  C3	dicators (2 or more of the dicators (2 or more of the dicators (B1) (R)  Water Marks (B1) (R)  Gediment Deposits (B3) (R)  Orift Deposits (B3) (R)  Orainage Patterns (E)  Ory-Season Water T  Crayfish Burrows (C8)	required) iverine) B2) (Riverine) Riverine) B10) able (C2)
HYDROLOGY Wetland Hydrolo Primary Indicators Surface Wate High Water T Saturation (A Water Marks Sediment De Drift Deposits Surface Soil (	ry layer.  regy Indicators: s (minimum of one) er (A1) Table (A2) 3) (B1) (Nonriverine) posits (B2) (Nonriverine) s (B3) (Nonriverine)	required; c	Salt Crust (B Biotic Crust Inve Aquatic Inve Hydrogen St Oxidized Rhi	(B12) Interpreted the second of the second o	ring Roots ((	Secondary Inc.  Secondary Inc.  X  X  C3)  S  S  X  C3	dicators (2 or more of the dicators (2 or more of the dicators (B1) (R)  Water Marks (B1) (R)  Gediment Deposits (B3) (R)  Orift Deposits (B3) (R)  Orainage Patterns (E)  Ory-Season Water T  Crayfish Burrows (C8)	required) iverine) B2) (Riverine) Riverine) B10) able (C2) B) Aerial Imagery (C9)
HYDROLOGY Wetland Hydrolo Primary Indicators Surface Wate High Water T Saturation (A Water Marks Sediment De Drift Deposits Surface Soil ( Inundation Vi	ry layer.  regy Indicators: s (minimum of one) er (A1) rable (A2) 3) (B1) (Nonriverine) posits (B2) (Nonriverine) s (B3) (Nonriverine) Cracks (B6)	required; c	heck all that apply Salt Crust (B Biotic Crust (Aquatic Inve Hydrogen Su Oxidized Rhi Presence of Recent Iron Thin Muck S	(B12) Interpreted the second of the second o	ring Roots ((	Secondary Inc.  Secondary Inc.  X  X  C3)  S  S  S  S  S  S  S  S  S  S  S  S  S	dicators (2 or more of Vater Marks (B1) (R) Sediment Deposits (B3) (F) Orainage Patterns (E) Ory-Season Water The Crayfish Burrows (C8) Seaturation Visible on	required) iverine) B2) (Riverine) Riverine) B10) able (C2) B) Aerial Imagery (C9)
HYDROLOGY Wetland Hydrolo Primary Indicators Surface Wate High Water T Saturation (A Water Marks Sediment De Drift Deposits Surface Soil ( Inundation Vi	rgy Indicators: s (minimum of one er (A1) rable (A2) 3) (B1) (Nonriverine posits (B2) (Nonriverine cracks (B6) sible on Aerial Imad d Leaves (B9)	required; c	heck all that apply Salt Crust (B Biotic Crust (Aquatic Inve Hydrogen Su Oxidized Rhi Presence of Recent Iron Thin Muck S	(B12) rtebrates (B13) ulfide Odor (C1) izospheres along Liv Reduced Iron (C4) Reduction in Tilled S urface (C7)	ring Roots ((	Secondary Inc.  Secondary Inc.  X  X  C3)  S  S  S  S  S  S  S  S  S  S  S  S  S	dicators (2 or more of Nater Marks (B1) (Resemble of Nater Marks (B3) (Resemble of Nater Marks (B3) (Resemble of Nater Marks (B3) (Resemble of Nater of Nate	required) iverine) B2) (Riverine) Riverine) B10) able (C2) B) Aerial Imagery (C9)
HYDROLOGY Wetland Hydrolo Primary Indicators Surface Wate High Water T Saturation (A Water Marks Sediment De Drift Deposits Surface Soil ( Inundation Vi Water-Staine	ry layer.  ry layer.	required; c	heck all that apply Salt Crust (B Biotic Crust (Aquatic Inve Hydrogen Su Oxidized Rhi Presence of Recent Iron Thin Muck S	(B12) rtebrates (B13) ulfide Odor (C1) izospheres along Liv Reduced Iron (C4) Reduction in Tilled S urface (C7)	ring Roots ((	Secondary Inc.  Secondary Inc.  X  X  C3)  S  S  S  S  S  S  S  S  S  S  S  S  S	dicators (2 or more of Nater Marks (B1) (Resemble of Nater Marks (B3) (Resemble of Nater Marks (B3) (Resemble of Nater Marks (B3) (Resemble of Nater of Nate	required) iverine) B2) (Riverine) Riverine) B10) able (C2) B) Aerial Imagery (C9)
HYDROLOGY Wetland Hydrolo Primary Indicators Surface Wate High Water T Saturation (A Water Marks Sediment De Drift Deposits Surface Soil ( Inundation Vi Water-Staine	resent? Yes	required; c	Salt Crust (B Biotic Crust (B Aquatic Inve Hydrogen St Oxidized Rhi Presence of Recent Iron Thin Muck S Other (Expla	(B12) rtebrates (B13) ulfide Odor (C1) izospheres along Liv Reduced Iron (C4) Reduction in Tilled S urface (C7) in in Remarks)	ring Roots (i	Secondary Inc.  Secondary Inc.  X  X  C3)  S  S  F	dicators (2 or more of Nater Marks (B1) (Resemble of Nater Marks (B3) (Resemble of Nater Marks (B3) (Resemble of Nater Marks (B3) (Resemble of Nater of Nate	required) iverine) B2) (Riverine) B10) able (C2) B) Aerial Imagery (C9) B)
HYDROLOGY Wetland Hydrolo Primary Indicators Surface Wate High Water T Saturation (A Water Marks Sediment De Drift Deposits Surface Soil ( Inundation Vi Water-Staine Field Observatio Surface Water Prese Saturation Prese	resent? Yes_nt? Yes_nt? Yes_nt? Yes_nt? Yes_nt?	required; c	Salt Crust (B Biotic Crust (B Aquatic Inve Hydrogen St Oxidized Rhi Presence of Recent Iron Thin Muck S Other (Expla	(B12) Intebrates (B13) Intebrates (B13) Interpreted (C1) Interpreted (C1) Interpreted (C1) Interpreted (C2) Interpreted (C3) Interpreted (C4)	ring Roots (Goils (C6)	Secondary Inc.  Secondary Inc.  X  X  C3)  S  S  F	dicators (2 or more of the color); - = light (less dicato	required) iverine) B2) (Riverine) B10) able (C2) B) Aerial Imagery (C9) B)
HYDROLOGY Wetland Hydrolo Primary Indicators Surface Wate High Water T Saturation (A Water Marks Sediment De Drift Deposits Surface Soil (Inundation Vii) Water-Staine Field Observatio Surface Water Pi Water Table Press Saturation Presse (includes capillar)	resent? Yes_sent? Yes_syfringe)	required; c	Salt Crust (B Biotic Crust (B Aquatic Inve Hydrogen St Oxidized Rhi Presence of Recent Iron Thin Muck S Other (Expla	rtebrates (B13) ulfide Odor (C1) izospheres along Liv Reduced Iron (C4) Reduction in Tilled S urface (C7) in in Remarks)  Depth (inches): Depth (inches):	N/A >14	Secondary Inc.  Secondary Inc.  X  X  C3)  Wetland	dicators (2 or more of Nater Marks (B1) (Research Marks (B1)) (Research Marks (B3)) (For Ma	required) iverine) B2) (Riverine) Riverine) B10) able (C2) B) Aerial Imagery (C9) B) 5)
HYDROLOGY Wetland Hydrolo Primary Indicators Surface Wate High Water T Saturation (A Water Marks Sediment De Drift Deposits Surface Soil (Inundation Vi) Water-Staine Field Observatio Surface Water Programme Saturation Preservation Preserva	resent? Yes_sent? Yes_syfringe)	required; c	Salt Crust (B Biotic Crust (B Aquatic Inve Hydrogen St Oxidized Rhi Presence of Recent Iron Thin Muck S Other (Expla	(B12) rtebrates (B13) ulfide Odor (C1) izospheres along Liv Reduced Iron (C4) Reduction in Tilled S urface (C7) in in Remarks)  Depth (inches): Depth (inches):	N/A >14	Secondary Inc.  Secondary Inc.  X  X  C3)  Wetland  available:	dicators (2 or more of Nater Marks (B1) (Resemble of Nater Marks (B3) (Resemble of Nater Marks (D3) (Resemble of Nater Marks (	required) iverine) B2) (Riverine) Riverine) B10) able (C2) B3) Aerial Imagery (C9) B5) F7 No
HYDROLOGY Wetland Hydrolo Primary Indicators Surface Water High Water T Saturation (A Water Marks Sediment De Drift Deposits Surface Soil (Inundation Vii) Water-Staine Field Observatio Surface Water Programme Saturation Preservation Preser	resent? Yes_nt? Yes_y fringe)  red Data (stream gard)	required; c	Salt Crust (B Biotic Crust (B Aquatic Inve Hydrogen St Oxidized Rhi Presence of Recent Iron Thin Muck S Other (Expla	rtebrates (B13) ulfide Odor (C1) izospheres along Liv Reduced Iron (C4) Reduction in Tilled S urface (C7) in in Remarks)  Depth (inches): Depth (inches):	N/A >14 14  pections), if	Secondary Inc.  Secondary Inc.  X X C3)  Wetland  available:	dicators (2 or more of Nater Marks (B1) (Research Marks (B1)) (Research Marks (B3)) (For Ma	required) iverine) B2) (Riverine) Riverine) B10) able (C2) B3) Aerial Imagery (C9) B5) F7

Project/Site: Fumaria Solar Project		City/County:	- / Kittitas	Sampling Dat	e: 4/11/2017
Applicant/Owner: TUUSSO Energy, LLC				State: WA Sampling	Point: <b>FP07</b>
Investigator(s): Evan Dulin, Jamie Young		Section, T	ownship, Rang	ge: Section 09, T18N, R18E	
Landform (hillslope, terrace, etc.): Hillslope			Local relief	(concave, convex, none): Convex	Slope (%): 5
Subregion (LRR): B, Columbia/Snake River Pl	lateau	Lat: 47.057698	_ Lor	ng: -120.590118 Datur	n: NAD 1983
Soil Map Unit Name: Metmill very grav	elly ashy loam, 0	to 5 percent slopes	(844)	NWI classification: N	None
Are climatic / hydrologic conditions on the site t	typical for this time	e of year?	Ye	es No X* (If no, ex	plain in Remarks)
Are Vegetation,Soil	_, or Hydrology	significantly o	disturbed?	Are "Normal Circumstances" present?	Yes X No
	_, or Hydrology			(If needed, explain any answers in Rer	,
SUMMARY OF FINDINGS – Attach		wing sampling	point locat	tions, transects, important fe	atures, etc.
Hydrophytic Vegetation Present?	Yes X	No			
Hydric Soil Present?	Yes	No <b>X</b>	Is the Samp		
Wetland Hydrology Present?	Yes	No <b>X</b>	within a We	163 110_	<u>X</u>
Precipitation prior to fieldwork: 0.61" two w Remarks: Sample plot taken in the disturbed road ROW.	eeks prior, 2.64"	above normal for C	YTD, 3.10" ab	ove normal for WYTD. *Wetter than n	ormal.
VEGETATION					
T. 01.1	Absolute	Dominant	Indicator	Dominance Test worksheet:	
<u>Tree Stratum</u> (Plot size: <u>30' r</u> )	% Cover	Species?	<u>Status</u>	Number of Dominant Species	
1.	_			That Are OBL, FACW, or FAC:	1(A)
2.					
3.				Total Number of Dominant	
4				Species Across All Strata:	1 (B)
0 1 /0 1 0 1		= Total Cover			
Sapling/Shrub Stratum (Plot size: 10' r	)			Percent of Dominant Species	
1.				That Are OBL, FACW, or FAC:	<u>100%</u> (A/B)
2.				Prevalence Index worksheet:	
3.				Total % Cover of: Multiply I	oy:
4				OBL species 0 x 1 =	0
5.				FACW species0 x 2 =	0
(District Size	0%	= Total Cover		FAC species 65 x 3 =	195
Herb Stratum (Plot size: 5' r )				FACU species 30 x 4 =	120
Elymus repens	65%	Yes	FAC	UPL species 5 x 5 =	25
2. Lactuca serriola	15%	No	FACU	Column Totals: 100 (A)	340 (B)
3. Hypochaeris radicata	15%	No	FACU	Prevalence Index = B/A =	3.40
4. Centaurea stoebe	3%	No	NOL	Hydrophytic Vegetation Indicato	
5. Tragopogon dubius	2%	No	NOL	1 - Rapid Test for Hydrophytic	Vegetation
6.			-	X 2 - Dominance Test is >50%	
7.			-	3 - Prevalence Index is ≤3.01	
8.				4 - Morphological Adaptations	
9.				data in Remarks or on a se	
10.			-	5 - Wetland Non-Vascular Plar	
11.				Problematic Hydrophytic Vege	
Woody Vine Stratum (Plot size: 10' r		= Total Cover		<sup>1</sup> Indicators of hydric soil and wetlan	nd hydrology must
Woody Vine Stratum (Plot size: 10 r 1.	/			be present.	
2.				Hydrophytic	
	0%	= Total Cover		Vegetation Yes X	No
% Bare Ground in Herb Stratum 0%				Present?	
Remarks:				Entered by: KL/ED	QC by: TJD
				y.	· ,

Profile Description: (Describe to the dep	th needed to docume	nt the indicator o	r confirm	the absence of i	ndicators.)	
Depth Matrix		Redox Fea	itures			
(inches) Color (moist) %	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-13 7.5YR 3/3 100					SL	
		. <u> </u>		<u> </u>		-
<sup>1</sup> Type: C=Concentration, D=Depletion, RM=			Sand Grain		PL=Pore Lining, M=Ma	
Hydric Soil Indicators: (Applicable to all I					or Problematic Hydrid	Solls":
Histosol (A1)	Sandy Redox (	,			A9) (LRR C)	
Histic Epipedon (A2) Black Histic (A3)	Stripped Matrix			Reduced Ve	A10) ( <b>LRR B</b> )	
` ′	Loamy Mucky Loamy Gleyed				,	
Hydrogen Sulfide (A4) Stratified Layers (A5) ( <b>LRR C</b> )		, ,			Material (TF2)	
1 cm Muck (A9) (LRR D)	Depleted Matri Redox Dark St			Other (Expla	in in Remarks)	
Depleted Below Dark Surface (A11)	Depleted Dark	,				
Thick Dark Surface (A12)	Redox Depres			<sup>3</sup> Indicators of hy	drophytic vegetation ar	nd
Sandy Mucky Mineral (S1)	Vernal Pools (I			•	logy must be present,	
Sandy Gleyed Matrix (S4)		<b>5</b> )		-	ed or problematic.	
				ı	· ·	
Restrictive Layer (if present):  Type: None						
				Hydric Soil Pre	sent? Yes	No X
Depth (inches): N/A			. £	Hydric Soil Pre		No X
Depth (inches): N/A  Remarks: S = sand; Si = silt; C = clay		= coarse; f = fine;	vf = very fir			
Depth (inches): N/A		= coarse; f = fine;	vf = very fir			
Depth (inches): N/A  Remarks: S = sand; Si = silt; C = clay Rocks throughout from road ROW fill materi  HYDROLOGY		= coarse; f = fine;	vf = very fii			
Depth (inches): N/A  Remarks: S = sand; Si = silt; C = clay Rocks throughout from road ROW fill materi  HYDROLOGY  Wetland Hydrology Indicators:	al.	= coarse; f = fine;	vf = very fir			
Depth (inches): N/A  Remarks: S = sand; Si = silt; C = clay Rocks throughout from road ROW fill materi  HYDROLOGY	al. d; check all that apply)		vf = very fii	ne; + = heavy (mo	ore clay); - = light (less	clay)
Depth (inches): N/A  Remarks: S = sand; Si = silt; C = clay Rocks throughout from road ROW fill materi  HYDROLOGY  Wetland Hydrology Indicators:	al.  d; check all that apply)  Salt Crust (B1	1)	vf = very fii	ne; + = heavy (mo	ore clay); - = light (less	quired)
Depth (inches):    N/A	al.  d; check all that apply)  Salt Crust (B1  Biotic Crust (B	1) 12)	vf = very fii	ne; + = heavy (mo	ore clay); - = light (less ndicators (2 or more re Water Marks (B1) ( <b>Riv</b> Sediment Deposits (B2	quired) rerine) 2) (Riverine)
Depth (inches): N/A  Remarks: S = sand; Si = silt; C = clay Rocks throughout from road ROW fill materi  HYDROLOGY  Wetland Hydrology Indicators:  Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3)	al. d; check all that apply) Salt Crust (B1 Biotic Crust (B Aquatic Inverte	1) 12) ebrates (B13)	vf = very fii	ne; + = heavy (mo	ore clay); - = light (less andicators (2 or more re Water Marks (B1) (Riv Sediment Deposits (B3) (Riv Drift Deposits (B3) (Riv	quired) verine) 2) (Riverine) verine)
Depth (inches): N/A  Remarks: S = sand; Si = silt; C = clay Rocks throughout from road ROW fill materi  HYDROLOGY  Wetland Hydrology Indicators:  Primary Indicators (minimum of one required Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)	al.  d; check all that apply)  Salt Crust (B1  Biotic Crust (B  Aquatic Inverte  Hydrogen Sulfi	1) 12) ebrates (B13) de Odor (C1)		Secondary I	ore clay); - = light (less ndicators (2 or more re Water Marks (B1) ( <b>Riv</b> Sediment Deposits (B3) Drift Deposits (B3) ( <b>Riv</b> Drainage Patterns (B1	quired) rerine) 2) (Riverine) verine)
Depth (inches): N/A  Remarks: S = sand; Si = silt; C = clay Rocks throughout from road ROW fill materi  HYDROLOGY  Wetland Hydrology Indicators:  Primary Indicators (minimum of one required  Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)	al. d; check all that apply) Salt Crust (B1 Biotic Crust (B Aquatic Inverte Hydrogen Sulfi Oxidized Rhize	1) 12) ebrates (B13) de Odor (C1) espheres along Liv		Secondary I  C3)	ore clay); - = light (less ndicators (2 or more re Water Marks (B1) (Riv Sediment Deposits (B3) (Rir Drainage Patterns (B1) Dry-Season Water Tal	quired) rerine) 2) (Riverine) verine) 0) ble (C2)
Depth (inches): N/A  Remarks: S = sand; Si = silt; C = clay Rocks throughout from road ROW fill materi  HYDROLOGY  Wetland Hydrology Indicators:  Primary Indicators (minimum of one required Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Nonriverine)	al.  d; check all that apply)  Salt Crust (B1  Biotic Crust (B  Aquatic Inverte  Hydrogen Sulfi  Oxidized Rhizo	1) 12) ebrates (B13) de Odor (C1) espheres along Liv educed Iron (C4)	ing Roots (	Secondary I  C3)	ndicators (2 or more re Water Marks (B1) (Riv Sediment Deposits (B3) (Ri Drift Deposits (B3) (Ri Drainage Patterns (B1 Dry-Season Water Tal Crayfish Burrows (C8)	quired) rerine) 2) (Riverine) verine) 0) ble (C2)
Depth (inches): N/A  Remarks: S = sand; Si = silt; C = clay Rocks throughout from road ROW fill material HYDROLOGY  Wetland Hydrology Indicators:  Primary Indicators (minimum of one required Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Nonriverine)  Surface Soil Cracks (B6)	al.  2; check all that apply)  Salt Crust (B1 Biotic Crust (B Aquatic Inverte Hydrogen Sulfi Oxidized Rhizo Presence of Re	1) 12) ebrates (B13) de Odor (C1) ospheres along Liv educed Iron (C4) eduction in Tilled S	ing Roots (	Secondary I  C3)	ore clay); - = light (less ndicators (2 or more re Water Marks (B1) ( <b>Riv</b> Sediment Deposits (B3) ( <b>Ri</b> Drainage Patterns (B1 Dry-Season Water Tal Crayfish Burrows (C8) Saturation Visible on A	quired) rerine) 2) (Riverine) verine) 0) ble (C2)
Depth (inches): N/A  Remarks: S = sand; Si = silt; C = clay Rocks throughout from road ROW fill materi  HYDROLOGY  Wetland Hydrology Indicators:  Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (B)	al.  d; check all that apply)  Salt Crust (B1 Biotic Crust (B Aquatic Inverte Hydrogen Sulfi Oxidized Rhizo Presence of Recent Iron Re	1) 12) ebrates (B13) de Odor (C1) espheres along Liveduced Iron (C4) eduction in Tilled Services (C7)	ing Roots (	Secondary I  C3)	ore clay); - = light (less ndicators (2 or more rewards (B1) (Riv Sediment Deposits (B2) (Riv Drainage Patterns (B1) Dry-Season Water Tal Crayfish Burrows (C8) Saturation Visible on A Shallow Aquitard (D3)	quired) verine) 2) (Riverine) verine) 0) ble (C2) verial Imagery (C9)
Depth (inches): N/A  Remarks: S = sand; Si = silt; C = clay Rocks throughout from road ROW fill material HYDROLOGY  Wetland Hydrology Indicators:  Primary Indicators (minimum of one required Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Nonriverine)  Surface Soil Cracks (B6)  Inundation Visible on Aerial Imagery (B3)  Water-Stained Leaves (B9)	al.  2; check all that apply)  Salt Crust (B1 Biotic Crust (B Aquatic Inverte Hydrogen Sulfi Oxidized Rhizo Presence of Re	1) 12) ebrates (B13) de Odor (C1) espheres along Liveduced Iron (C4) eduction in Tilled Services (C7)	ing Roots (	Secondary I  C3)	ore clay); - = light (less ndicators (2 or more re Water Marks (B1) ( <b>Riv</b> Sediment Deposits (B3) ( <b>Ri</b> Drainage Patterns (B1 Dry-Season Water Tal Crayfish Burrows (C8) Saturation Visible on A	quired) verine) 2) (Riverine) verine) 0) ble (C2) verial Imagery (C9)
Depth (inches): N/A  Remarks: S = sand; Si = silt; C = clay Rocks throughout from road ROW fill materi  HYDROLOGY  Wetland Hydrology Indicators:  Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (B)	al.  d; check all that apply)  Salt Crust (B1 Biotic Crust (B Aquatic Inverte Hydrogen Sulfi Oxidized Rhizo Presence of Recent Iron Re	1) 12) ebrates (B13) de Odor (C1) espheres along Liveduced Iron (C4) eduction in Tilled Services (C7)	ing Roots (	Secondary I  C3)	ore clay); - = light (less ndicators (2 or more rewards (B1) (Riv Sediment Deposits (B2) (Riv Drainage Patterns (B1) Dry-Season Water Tal Crayfish Burrows (C8) Saturation Visible on A Shallow Aquitard (D3)	quired) verine) 2) (Riverine) verine) 0) ble (C2) verial Imagery (C9)
Depth (inches): N/A  Remarks: S = sand; Si = silt; C = clay Rocks throughout from road ROW fill material HYDROLOGY  Wetland Hydrology Indicators:  Primary Indicators (minimum of one required Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Nonriverine)  Surface Soil Cracks (B6)  Inundation Visible on Aerial Imagery (B)  Water-Stained Leaves (B9)  Field Observations:  Surface Water Present? Yes	al.    Salt Crust (B1     Biotic Crust (B     Aquatic Inverte     Hydrogen Sulfi     Oxidized Rhizc     Presence of Recent Iron Recent Iron Recent Iron Muck Sur     Other (Explain     No	1) 12) ebrates (B13) de Odor (C1) espheres along Liveduced Iron (C4) eduction in Tilled Services (C7)	ing Roots (	Secondary I  C3)	ore clay); - = light (less ndicators (2 or more rewards (B1) (Riv Sediment Deposits (B2) (Riv Drainage Patterns (B1) Dry-Season Water Tal Crayfish Burrows (C8) Saturation Visible on A Shallow Aquitard (D3)	quired) verine) 2) (Riverine) verine) 0) ble (C2) verial Imagery (C9)
Depth (inches): N/A  Remarks: S = sand; Si = silt; C = clay Rocks throughout from road ROW fill material HYDROLOGY  Wetland Hydrology Indicators:  Primary Indicators (minimum of one required Surface Water (A1)  High Water Table (A2)  Saturation (A3)  Water Marks (B1) (Nonriverine)  Sediment Deposits (B2) (Nonriverine)  Drift Deposits (B3) (Nonriverine)  Surface Soil Cracks (B6)  Inundation Visible on Aerial Imagery (B3)  Water-Stained Leaves (B9)  Field Observations:  Surface Water Present? Yes  Water Table Present? Yes	al.    Salt Crust (B1     Biotic Crust (B     Aquatic Inverte     Hydrogen Sulfi     Oxidized Rhize     Presence of Recent Iron Iron Iron Iron Iron Iron Iron Iron	1) 12) bebrates (B13) de Odor (C1) bepheres along Liveduced Iron (C4) eduction in Tilled Serveduction in Remarks)  Depth (inches): Depth (inches):	ing Roots (	Secondary I  C3)	ore clay); - = light (less one clay); - = light	quired) rerine) 2) (Riverine) verine) 0) ble (C2) verial Imagery (C9)
Depth (inches): N/A  Remarks: S = sand; Si = silt; C = clay Rocks throughout from road ROW fill material throughout from road ROW fill material throughout from road ROW fill material through	al.    Salt Crust (B1     Biotic Crust (B     Aquatic Inverte     Hydrogen Sulfi     Oxidized Rhizc     Presence of Recent Iron Recent Iron Recent Iron Muck Sur     Other (Explain     No	1) 12) brates (B13) de Odor (C1) bspheres along Liveduced Iron (C4) eduction in Tilled Serveduction in Remarks)  Depth (inches):	ing Roots ( roils (C6)	Secondary I  C3)	ore clay); - = light (less on elight); - = light (less on	quired) verine) 2) (Riverine) verine) 0) ble (C2) verial Imagery (C9)
Depth (inches): N/A  Remarks: S = sand; Si = silt; C = clay Rocks throughout from road ROW fill material ROW fill materi	al.    Salt Crust (B1     Biotic Crust (B     Aquatic Inverte     Hydrogen Sulfi     Oxidized Rhize     Presence of Recent Iron Recent Iron Recent     Other (Explain     No	1) 12) bbrates (B13) de Odor (C1) bspheres along Liveduced Iron (C4) eduction in Tilled S face (C7) in Remarks)  Depth (inches): Depth (inches):	ing Roots (coils (C6)	Secondary I  C3)  Wetland	ore clay); - = light (less one clay); - = light	quired) rerine) 2) (Riverine) verine) 0) ble (C2) verial Imagery (C9)
Depth (inches): N/A  Remarks: S = sand; Si = silt; C = clay Rocks throughout from road ROW fill material ROW fill materi	al.    Salt Crust (B1     Biotic Crust (B     Aquatic Inverte     Hydrogen Sulfi     Oxidized Rhize     Presence of Recent Iron Recent Iron Recent     Other (Explain     No	1) 12) bbrates (B13) de Odor (C1) bspheres along Liveduced Iron (C4) eduction in Tilled S face (C7) in Remarks)  Depth (inches): Depth (inches):	ing Roots (coils (C6)	Secondary I  C3)  Wetland	ore clay); - = light (less one clay); - = light	quired) rerine) 2) (Riverine) verine) 0) ble (C2) verial Imagery (C9)
Depth (inches): N/A  Remarks: S = sand; Si = silt; C = clay Rocks throughout from road ROW fill material ROW fill materi	al.    Salt Crust (B1     Biotic Crust (B     Aquatic Inverte     Hydrogen Sulfi     Oxidized Rhize     Presence of Recent Iron Recent Iron Recent     Other (Explain     No	1) 12) bbrates (B13) de Odor (C1) bspheres along Liveduced Iron (C4) eduction in Tilled S face (C7) in Remarks)  Depth (inches): Depth (inches):	ing Roots (coils (C6)	Secondary I  C3)  Wetland	ore clay); - = light (less one clay); - = light	quired) rerine) 2) (Riverine) verine) 0) ble (C2) verial Imagery (C9)

Project/Site: F	umaria Solar Project				City/County:	- / Kittitas		Saı	mpling Date	e: <u>4/11/20</u>	17
Applicant/Owner:	TUUSSO Energy, LLC						State: WA	_	Sampling	Point:	FP08
Investigator(s):	Evan Dulin, Jamie Young				Section, To	ownship, Range	e: Section 16, T18N	, R18E			
Landform (hillslope	, terrace, etc.): Channel				•	Local relief (	concave, convex, none	e): Con	cave	Slope (%	): 1
Subregion (LRR):	B, Columbia/Snake River Pl	ateau		Lat:	47.043023	_ Long	g: -120.593498		Datun	n: NAD 19	183
Soil Map Unit Nan	ne: Nanum ashy loar	n, 0 to 2	percent	slopes	(480)	_	NV	/I class	sification: N	lone	
Are climatic / hydr	rologic conditions on the site t	ypical fo	or this tim	e of ye	ear?	Yes	s No	X*	(If no, ex	olain in Re	marks)
Are Vegetation	,Soil	, or Hy	drology		significantly of	disturbed? A	re "Normal Circums	tances	" present?	Yes X	. No
Are Vegetation	,Soil	_, or Hy	drology		naturally prob	olematic? (I	f needed, explain ar	ny ansv	vers in Ren	narks.)	
SUMMARY O	F FINDINGS - Attach	site m	ap sho	wing	sampling	point locat	ions, transects	, imp	ortant fe	atures,	etc.
Hydrophytic Vege	etation Present?	Yes	Х	No							
Hydric Soil Prese	ent?	Yes		No	X	Is the Samp					
Wetland Hydrolog	gy Present?	Yes	X	No		within a Wet	tland? Yes_		No_	X	
Precipitation prior Remarks: Sample plot taken	to fieldwork: 0.61" two was in vegetated road side ditch	·				YTD, 3.10" abo	ve normal for WYTI	D. *We	tter than no	ormal.	
VEGETATION	l										
		A	bsolute		Dominant	Indicator	Dominance Test	works	sheet:		
Tree Stratum	(Plot size: <u>30' r</u> )	9	6 Cover		Species?	<u>Status</u>	Number of Domir	nant Sp	ecies		
1.		_					That Are OBL, FA	ACW, c	or FAC:	1	(A)
2.		_									
3.		_					Total Number of	Domina	ant		
4.		_					Species Across A	All Strat	ta:	1	(B)
			0%	= Tota	al Cover						
Sapling/Shrub Str	atum (Plot size: 10' r	)					Percent of Domin	ant Sp	ecies		
1.							That Are OBL, FA	ACW, c	or FAC:	<u>100%</u>	(A/B)
2.							Prevalence Inde	x work	sheet:		
3.							Total % Cov	er of:	Multiply b	y:	
4.				•			OBL species	0	x 1 =	0	
5.							FACW species	85	x 2 =	17	)
			0%	= Tota	al Cover		FAC species	0	x 3 =	0	
Herb Stratum	(Plot size: <u>5' r</u> )						FACU species	0	x 4 =	0	
1. Phalaris arun	dinacea		85%		Yes	FACW	UPL species	0	x 5 =	0	
2.							Column Totals:	85	(A)	17	0 (B)
3.				•			Prevalence In	dex =	B/A =	2.00	
4.				•			Hydrophytic Veg	jetatio	n Indicato	rs:	
5.							1 - Rapid Tes	t for H	ydrophytic '	Vegetation	ı
6.							X 2 - Dominano	e Test	is >50%		
7.							3 - Prevalenc	e Inde	k is ≤3.0 <sup>1</sup>		
8.							4 - Morpholog	gical Ad	daptations <sup>1</sup>	(Provide	supporting
9.							data in Re	marks	or on a sep	oarate she	et)
10.							5 - Wetland N	lon-Va	scular Plan	ts <sup>1</sup>	
11.		_		•			Problematic I	Hydrop	hytic Veget	ation <sup>1</sup> (Ex	plain)
		_	85%	= Tota	al Cover		<sup>1</sup> Indicators of hyd	-	-		
Woody Vine Strat	um (Plot size: 10' r	)					be present.				
1.											
2							Hydrophytic				
			0%	= Tota	al Cover		Vegetation	Yes	<u> </u>	lo	_
% Bare Ground in	Herb Stratum 15%						Present?				
Remarks:							Ente	ered by	: KL/ED (	QC by: TJ	D

SOIL							Sampling Po	int: FP08
Profile Descrip	ption: (Describe to th	e depth r	needed to documer	nt the indicator o	r confirm	the absence of in	dicators.)	
Depth	Matrix			Redox Fea	itures			
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-2	10YR 3/3	100					SiCL	
2-4	10YR 2/1	98	7.5YR 5/8	2	С	PL	SiL	
4-6	10YR 3/1	97	7.5YR 3/2	3	С	PL	SL	fill; faint redox
-	<u> </u>							. ,
	<del></del>		· -					
	<del></del>							
	<del></del>					<u> </u>		
<sup>1</sup> Type: C=Conc	centration, D=Depletion	RM=Rec	duced Matrix CS=Co	vered or Coated S	Sand Grain	s <sup>2</sup> l ocation: P	L=Pore Lining, M=N	Matrix
	licators: (Applicable to						r Problematic Hyd	
Histosol (A			Sandy Redox (			1 cm muck (A	-	
Histic Epipe	,		Stripped Matrix			2 cm Muck (A		
Black Histic			Loamy Mucky N			Reduced Verl		
Hydrogen S	` '		Loamy Gleyed			Red Parent M	,	
	ayers (A5) ( <b>LRR C</b> )		Depleted Matrix				n in Remarks)	
	(A9) ( <b>LRR D</b> )		Redox Dark Su			Other (Explain	riii rtemanta)	
	elow Dark Surface (A1	1)	Depleted Dark					
	Surface (A12)	' /	Redox Depress	` '		<sup>3</sup> Indicators of hvd	rophytic vegetation	and
	ky Mineral (S1)		Vernal Pools (F	` '		•	gy must be present	
	yed Matrix (S4)		vernar i oois (i	<i>J</i>		•	d or problematic.	,
Garidy Gley	yeu Matrix (04)					uniess distrube	u or problematic.	
Restrictive Lay	er (if present):							
Type:	None							
Depth (inches	s): N/A					Hydric Soil Pres	ent? Yes	No X
Remarks:	S = sand; Si = silt; C =	-	•	coarse; f = fine;	vf = very fir	ne; + = heavy (mor	e clay); - = light (les	s clay)
Large rock fill be	elow 4". Shovel refusal	at 6" due	to rock fill.					
HYDROLOG	2V							
	logy Indicators:							
_	ors (minimum of one re	quired; ch	neck all that apply)			Secondary Inc	dicators (2 or more	required)
Surface Wa	ater (Δ1)		Salt Crust (B11	)			Vater Marks (B1) ( <b>R</b>	<del></del>
	Table (A2)		Biotic Crust (B1				Sediment Deposits (	•
Saturation			Aquatic Inverte				Orift Deposits (B3) (I	
	ks (B1) (Nonriverine)		Hydrogen Sulfic	• •			)rainage Patterns (E	,
	Deposits (B2) (Nonrive	rine)		spheres along Liv	ina Roots (		)ry-Season Water T	
	sits (B3) (Nonriverine)	1110)		educed Iron (C4)	ilig rtoots (		Crayfish Burrows (C	
X Surface So	, , , , ,				coile (C6)			
	Visible on Aerial Image	n. (D7)	Thin Muck Surf	duction in Tilled S	iolis (Co)		Shallow Aquitard (D3	Aerial Imagery (C9)
	9	ту (Б7)						
	ned Leaves (B9)		Other (Explain	in Remarks)			FAC-Neutral Test (D	
Field Observat								
Surface Water				Depth (inches):	N/A	-		
Water Table Pr			· —	Depth (inches):	>6	Wetland	Hydrology Present	?
Saturation Pres			No X	Depth (inches):	>6	-	Yes X	No
(includes capilla			- d	A	4: \ :-			
Describe Reco	rded Data (stream gau	ge, monito	oring well, aerial pho	tos, previous insp	ections), if	available:		
Remarks:							Entered by: KL/ED	QC by: TJD
Shoval refusal a	at 6", uncertain how dee	ep to satu	ration and water tab	le.				<del></del>

Project/Site: F	umaria Solar Project				City/County:	- / Kittitas		s	ampling Dat	e: <u>4/11/20</u>	17
Applicant/Owner:	TUUSSO Energy, LLC						State:	WA	Sampling	Point:	FP09
Investigator(s):	Evan Dulin, Jamie Young				Section, To	ownship, Range	e: Section 20,	T18N, R18	BE		
Landform (hillslope	e, terrace, etc.): Channel					Local relief	(concave, convex	x, none): Co	ncave	Slope (%	): 0
Subregion (LRR):	B, Columbia/Snake River P	lateau		Lat:	47.038732	Lon	g: <u>-120.60873</u> 4	1	Datur	n: NAD 19	983
Soil Map Unit Nar	me: Weirman-Kayak-	Zillah cor	nplex, 0	to 2 p	ercent slopes	(809)		NWI cla	ssification: N	None	
Are climatic / hyd	rologic conditions on the site	typical for	this tim	e of ye	ear?	Ye	s	No X*	(If no, ex	plain in Re	marks)
Are Vegetation	,Soil	_, or Hyd	Irology		significantly o		re "Normal Cir	cumstance	es" present?	Yes X	No
Are Vegetation	,Soil	_, or Hyd			naturally prob		If needed, expl	-			
	F FINDINGS – Attach	site ma	•	wing	sampling	point locat	ions, transe	ects, im	portant fe	atures,	etc.
Hydrophytic Vege		Yes	X	No		la tha Canan	I. I. A				
Hydric Soil Prese		Yes	X	No		Is the Samp					
Wetland Hydrolog		Yes	Х	No		within a We		Yes X	No_		
Precipitation prior Remarks: <b>FW06.</b> Depressio	nal PEM, fed by runoff from p	•				YTD, 3.10" abo				ormal.	
VEGETATION	l .										
		Ak	solute		Dominant	Indicator	Dominance	Test wor	ksheet:		
Tree Stratum	(Plot size: <u>30' r</u> )	<u>%</u>	Cover		Species?	<u>Status</u>	Number of [	Dominant S	Species		
1.				, ,			That Are OE	BL, FACW,	or FAC:	1	_ (A)
2.											
3.				, ,			Total Numb	er of Domi	nant		
4.				, ,			Species Acr	oss All Str	ata:	1	(B)
			0%	= Tota	al Cover						
Sapling/Shrub Str	<u>ratum</u> (Plot size: <u>10' r</u>	)					Percent of D	Dominant S	pecies		
1							That Are OE	BL, FACW,	or FAC:	<u>100%</u>	(A/B)
2.							Prevalence				
3.				i i			Total %	6 Cover of:	Multiply I	oy:	
4.				, ,			OBL species		x 1 =	90	)
5.				, ,			FACW spec	ies <u>10</u>	x 2 =	20	)
			0%	= Tota	al Cover		FAC species	s <u>0</u>	x 3 =	0	
Herb Stratum	(Plot size: <u>5' r</u> )						FACU speci		x 4 =	0	
<ol> <li>Typha latifolia</li> </ol>	a		90%		Yes	OBL	UPL species	0	x 5 =	0	
2. Phalaris arun	ndinacea		10%	, ,	No	FACW	Column Tota		<b>—</b> `´	11	0 (B)
3.							Prevalen	ce Index	= B/A =	<u>1.10</u>	
4.							Hydrophyti	c Vegetati	on Indicato	rs:	
5.							F .		Hydrophytic	Vegetatio	า
6.							X 2 - Dom	inance Te	st is >50%		
7							3 - Prev	alence Ind	ex is ≤3.0 <sup>1</sup>		
8.							4 - Morp	hological i	Adaptations <sup>1</sup>	(Provide	supporting
9.									s or on a se		et)
10				i i			5 - Wetl	and Non-V	ascular Plar	nts <sup>1</sup>	
11							Problem	atic Hydro	phytic Vege	tation <sup>1</sup> (Ex	plain)
	/Put 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		100%	= Tota	al Cover		<sup>1</sup> Indicators of	of hydric so	il and wetlar	nd hydrolo	gy must
Woody Vine Strat	tum (Plot size: 10' r	)					be present.				
1. 2.							Hydrop	hytic			
			0%	= Tota	al Cover		Vegetat	-	es X M	No	
% Bare Ground in	n Herb Stratum 0%		J /0	- 1012	41 OOVEI		Present				_
	THOID Stratum 070						. 1000111		W. KI IED	00 by T1	D
Remarks:								⊏ntered t	y: KL/ED	QC by: 13	<u> </u>

Profile Descrip	tion: (Describe	to the depth	needed	to docu	ment the indicator	or confirm	the absence of i		oint: FP09
Depth	Ma	atrix	_		Redox F	eatures			
(inches)	Color (moist)	%	C	olor (mois	t)%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-8	10YR 2/1	100					_	coSiL	coarse
5-8	10YR 2/1	100				-		SiL+	
8-12	10YR 2/1	95		7.5YR 3/3	3 3	С	M	SiCL	Rocks / Cobbles
				10YR 3/2	2	D	M		
12-13+	10YR 4/2	90		10YR 4/4	10	С	M	SiCL	
									<u> </u>
<sup>1</sup> Type: C=Conce	entration, D=Dep	letion, RM=Re	educed N	Matrix CS:	 =Covered or Coate	d Sand Grain	s. <sup>2</sup> Location:	PL=Pore Lining, M=N	Matrix.
Hydric Soil Indi								or Problematic Hyd	•
Histosol (A1	)		Sa	andy Redo	ox (S5)		1 cm muck (	A9) ( <b>LRR C</b> )	
Histic Epipe	don (A2)		St	tripped Ma	atrix (S6)		2 cm Muck (	A10) ( <b>LRR B</b> )	
Black Histic	(A3)		Lo	oamy Muc	ky Mineral (F1)		Reduced Ve	rtic (F18)	
Hydrogen S	ulfide (A4)			-	ved Matrix (F2)			Material (TF2)	
	yers (A5) ( <b>LRR (</b>	<b>3</b> )		epleted M	` ′			in in Remarks)	
1 cm Muck (	(A9) ( <b>LRR D</b> )		X R	edox Dark	Surface (F6)				
Depleted Be	low Dark Surface	e (A11)	De	epleted Da	ark Surface (F7)				
Thick Dark S	Surface (A12)		Re	edox Depi	essions (F8)		<sup>3</sup> Indicators of hy	drophytic vegetation	and
Sandy Muck	y Mineral (S1)		Ve	ernal Pool	s (F9)		wetland hydrol	logy must be present	
Sandy Gleye	ed Matrix (S4)						unless distrub	ed or problematic.	
Restrictive Laye	er (if present):								
_	None								
Depth (inches)							Hydric Soil Pre	sent? Yes X	No
Remarks:	S = sand: Si = si	t: C = clav: I	= loam (	or loamy:	co = coarse: f = fin	e· vf = verv fi	ne: + = heavy (mo	ore clay); - = light (les	ss clav)
Rock and cobble		•				o, vi voiy ii	no, · noavy (mo	ore day), light (let	o day)
HYDROLOG									
Wetland Hydrol					,				
Primary Indicato	rs (minimum of o	ne required; o	check all	I that appl	y)		Secondary I	ndicators (2 or more	required)
Surface Wa	ter (A1)		Sa	alt Crust (	B11)			Water Marks (B1) (F	Riverine)
High Water	Table (A2)		Bi	otic Crust	(B12)			Sediment Deposits (	B2) (Riverine)
X Saturation (A	43)		A	quatic Inve	ertebrates (B13)			Drift Deposits (B3) (I	Riverine)
Water Marks	s (B1) <b>(Nonriver</b> i	ine)	H	ydrogen S	ulfide Odor (C1)		X	Drainage Patterns (E	310)
Sediment De	eposits (B2) ( <b>No</b>	nriverine)	O	xidized Rh	nizospheres along l	iving Roots	(C3)	Dry-Season Water T	able (C2)
Drift Deposit	ts (B3) (Nonrive	rine)	Pr	resence o	f Reduced Iron (C4	)		Crayfish Burrows (C	8)
Surface Soil	Cracks (B6)		R	ecent Iron	Reduction in Tilled	Soils (C6)		Saturation Visible or	Aerial Imagery (C9)
Inundation \	/isible on Aerial I	magery (B7)	Th	nin Muck S	Surface (C7)			Shallow Aquitard (D	3)
Water-Stain	ed Leaves (B9)		O	ther (Expl	ain in Remarks)		X	FAC-Neutral Test (D	5)
Field Observation	ons:								
Surface Water F	Present? Ye	es	No	Х	Depth (inches):	N/A	_		
Water Table Pre	esent? Ye	es	No	Х	Depth (inches):	>13	Wetland	l Hydrology Presen	1?
Saturation Prese (includes capilla		es X	No		Depth (inches):	0-8	-	Yes <u>X</u>	No
		n gauge, moni	toring w	ell, aerial	photos, previous in	spections), if	available:		
	·				-				7.5
Remarks:								Entered by: KL/ED	QC bv: IJD
	face 0-8" Seen	observed at 5	" Water	anneare	to perch above the	more clavey	laver starting at 8	"	,

Project/Site: Fumaria Solar Project		City/County:	- / Kittitas	Sampling Date:	4/11/2017
Applicant/Owner: TUUSSO Energy, LLC				State: WA Sampling Po	oint: <b>FP10</b>
Investigator(s): Evan Dulin, Jamie Young		Section, T	ownship, Rand	ge: Section 20, T18N, R18E	
Landform (hillslope, terrace, etc.): Hillslope			_		ope (%): 1
Subregion (LRR): B, Columbia/Snake River Pl	ateau	Lat: 47.038727	_	· ——	NAD 1983
		to 2 percent slopes		NWI classification: Non	
Are climatic / hydrologic conditions on the site t			Y6		
, ,	, or Hydrology	•	disturbed?	Are "Normal Circumstances" present?	
	, or Hydrology			(If needed, explain any answers in Remar	
SUMMARY OF FINDINGS - Attach	site map sho	wing sampling	point locat	tions, transects, important feat	ures, etc.
Hydrophytic Vegetation Present?	Yes X	No			
Hydric Soil Present?	Yes	No X	Is the Samp	oled Area	
Wetland Hydrology Present?	Yes	No X	within a We	etland? Yes No )	<b>(</b>
Precipitation prior to fieldwork: 0.61" two w Remarks:	eeks prior, 2.64"	above normal for C	YTD, 3.10" abo	ove normal for WYTD. *Wetter than norm	nal.
VEGETATION					
	Absolute	Dominant	Indicator	Dominance Test worksheet:	
<u>Tree Stratum</u> (Plot size: <u>30' r</u> )	% Cover	Species?	<u>Status</u>	Number of Dominant Species	
1	_			That Are OBL, FACW, or FAC:	1 (A)
2					
3.				Total Number of Dominant	
4.				Species Across All Strata:	1 (B)
	0%	= Total Cover			
Sapling/Shrub Stratum (Plot size: 10' r	)			Percent of Dominant Species	
1.				That Are OBL, FACW, or FAC:	100% (A/B)
2.				Prevalence Index worksheet:	
3.				Total % Cover of: Multiply by:	
4.				OBL species 0 x 1 =	0
5.				FACW species 10 x 2 =	20
	0%	= Total Cover		FAC species 87 x 3 =	261
Herb Stratum (Plot size: <u>5' r</u> )				FACU species 4 x 4 =	16
1. Elymus repens	75%	Yes	FAC	UPL species 0 x 5 =	0
Phalaris arundinacea	10%	No	FACW	Column Totals: 101 (A)	297 (B)
3. Carex species	10%	No	FAC ?	Prevalence Index = B/A =	2.94
4. Dipsacus fullonum	2%	No	FAC	Hydrophytic Vegetation Indicators:	
5. Cirsium arvense	2%	No	FACU	1 - Rapid Test for Hydrophytic Ve	
6. Hypochaeris radicata	2%	No	FACU	X 2 - Dominance Test is >50%	3
7.	270		17100	3 - Prevalence Index is ≤3.0 <sup>1</sup>	
8.				4 - Morphological Adaptations <sup>1</sup> (P	rovide supporting
9.				data in Remarks or on a separ	
10.				5 - Wetland Non-Vascular Plants <sup>1</sup>	
11.				Problematic Hydrophytic Vegetati	
· · ·	4040/	- Tatal Causa		<del></del>	
Woody Vine Stratum (Plot size: 10' r		= Total Cover		Indicators of hydric soil and wetland I be present.	nydrology must
1.	<del></del> ,			DO PROGENIC	
2.				Hydrophytic	
	0%	= Total Cover	<u></u>	Vegetation Yes X No	
% Bare Ground in Herb Stratum0%				Present?	
Remarks:	_ <del></del>			Entered by: KL/ED QC	by: TJD
				, <u>——</u>	•

Profile Description: (Describe to the de	oth needed to docume	ent the indicator	or confirm	the absence of in	dicators.)	omt. FP10
Depth Matrix		Redox Fe				
(inches) Color (moist) %	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-10 10YR 2/1 100					coSiCL	coarse
10-14 10YR 3/2 99	10YR 4/4	1	С	M	SiC	
<sup>1</sup> Type: C=Concentration, D=Depletion, RM=			Sand Grain	s. <sup>2</sup> Location: P	L=Pore Lining, M=N	Matrix.
Hydric Soil Indicators: (Applicable to all	LRRs, unless otherwis	se noted.)			r Problematic Hyd	ric Soils³:
Histosol (A1)	Sandy Redox	` '		1 cm muck (A		
Histic Epipedon (A2)	Stripped Matri	x (S6)		2 cm Muck (A	(10) ( <b>LRR B</b> )	
Black Histic (A3)	Loamy Mucky	Mineral (F1)		Reduced Vert	tic (F18)	
Hydrogen Sulfide (A4)	Loamy Gleyed	, ,		Red Parent M	` ,	
Stratified Layers (A5) ( <b>LRR C</b> )	Depleted Matr	ix (F3)		Other (Explain	n in Remarks)	
1 cm Muck (A9) ( <b>LRR D</b> )	Redox Dark S	urface (F6)				
Depleted Below Dark Surface (A11)	Depleted Dark	Surface (F7)		2		
Thick Dark Surface (A12)	Redox Depres	sions (F8)		Indicators of hyd	rophytic vegetation	and
Sandy Mucky Mineral (S1)	Vernal Pools (	F9)		-	gy must be present	.,
Sandy Gleyed Matrix (S4)				unless distrube	d or problematic.	
Restrictive Layer (if present):						
Type: None						
Depth (inches): N/A				Hydric Soil Pres	ent? Yes	No X
Remarks: S = sand; Si = silt; C = clay	; L = loam or loamy; co	= coarse; f = fine;	vf = very fi	ne; + = heavy (mor	e clay); - = light (les	ss clay)
HYDROLOGY						
Wetland Hydrology Indicators:						
Primary Indicators (minimum of one require	d; check all that apply)			Secondary Inc	dicators (2 or more	required)
Surface Water (A1)	Salt Crust (B1	1)			Vater Marks (B1) ( <b>F</b>	<del></del>
High Water Table (A2)	Biotic Crust (B				Sediment Deposits (	,
Saturation (A3)	Aquatic Invert	•			Orift Deposits (B3)	
Water Marks (B1) (Nonriverine)	Hydrogen Sulf				Orainage Patterns (E	•
Sediment Deposits (B2) (Nonriverine)		ospheres along Liv	ina Roots (		ا کاریکانی 1-کاریکانی کاریکانی کاریکانی کاریکانی کاریکانی کاریکانی کاریکانی کاریکانی کاریکانی کاریکانی کاریکان	,
Drift Deposits (B3) (Nonriverine)		educed Iron (C4)	ing reces		Crayfish Burrows (C	
Surface Soil Cracks (B6)		eduction in Tilled	Soils (C6)			Aerial Imagery (C9)
Inundation Visible on Aerial Imagery (B			JOIIJ (00)		Shallow Aquitard (D	
Water-Stained Leaves (B9)	Other (Explain				AC-Neutral Test (E	
Field Observations:	Other (Explain	- In remaine,		<del></del> -	7.0 1.00.00	
	No. Y	Donth (instant)	NI/A			
	No X	Depth (inches):	N/A	- NACALOR -	Uvdrolom: Dans	12
		Depth (inches):	>14	- Ivvetiand	Hydrology Presen	
Saturation Present? Yes(includes capillary fringe)	No X	Depth (inches):	>14	-	Yes	No X
(molados sapinary mingo)						
Describe Recorded Data (stream gauge, m	onitoring well, aerial ph	otos, previous ins	pections), if	available:		
Describe Recorded Data (stream gauge, m	onitoring well, aerial ph	otos, previous ins	pections), if		P. 4	00 km T ID
	onitoring well, aerial ph	otos, previous ins	pections), if		Entered by: KL/ED	QC by: TJD

Project/Site: Fu	maria Solar Project		City/County:	- / Kittitas		Sampling Date:	4/11/2017
Applicant/Owner:	TUUSSO Energy, LLC				State: WA	Sampling P	oint: <b>FP11</b>
Investigator(s):	Evan Dulin, Jamie Young		Section, T	ownship, Rang	je: Section 20, T18N, R	:18E	
Landform (hillslope,	terrace, etc.): Depression	1		Local relief	(concave, convex, none): (	Concave S	lope (%): 0
Subregion (LRR):	B, Columbia/Snake River P	lateau	Lat: 47.038429	_ Lon	ng: -120.609158	Datum:	NAD 1983
Soil Map Unit Nam	e: Weirman-Kayak-	Zillah complex, 0 to	2 percent slopes	(809)	NWI	lassification: Nor	ne
Are climatic / hydro	ologic conditions on the site	typical for this time	of year?	Ye	es No )	(If no, explant)	ain in Remarks)
Are Vegetation		_, , , , _	significantly o		Are "Normal Circumstan	ces" present?	Yes X No
Are Vegetation		, or Hydrology	naturally prol		If needed, explain any a		
	FINDINGS - Attach			point locat	tions, transects, ir	nportant feat	tures, etc.
Hydrophytic Veget		Yes X	No	la tha Caman	alad Awas		
Hydric Soil Presen		Yes	No X	Is the Samp			
Wetland Hydrology		Yes	No <u>X</u>	within a We	169	No	
Precipitation prior t Remarks:	o fieldwork: 0.61" two we do not not not to the order of	·			ove normal for WYTD. *	Wetter than norn	nal.
VEGETATION	u iii iieaviiy distuibed alea k	eading into the power	er sub station from	n burried liries.			
VEGETATION		Absolute	Dominant	Indicator	Dominance Test we		
Tree Stratum	(Plot size: 30' r )	% Cover	Species?	Status	Number of Dominan		
1.		<u> </u>			That Are OBL, FAC		2 (A)
2.					111007110 032, 17101		(/ .)
3.					Total Number of Dor	minant	
4.					Species Across All S		3 (B)
		0% =	Total Cover				(=)
Sapling/Shrub Stra	tum (Plot size: 10' r				Percent of Dominan	t Species	
1. Salix exigua		10%	Yes	FACW	That Are OBL, FAC	•	67% (A/B)
2. Rosa nutkana		5%	Yes	FACU	Prevalence Index v		(/ (/ / / / / / / / / / / / / / / / / /
3.					Total % Cover		
4.					OBL species	0 x 1 =	0
5.						10 x 2 =	220
-		15% =	Total Cover			0 x 3 =	0
Herb Stratum	(Plot size: <u>5' r</u> )				FACU species	5 x 4 =	20
Phalaris arund	linacea	100%	Yes	FACW		0 x 5 =	0
2.					Column Totals: 1	15 (A)	240 (B)
3.					Prevalence Index	c = B/A =	2.09
4.					Hydrophytic Vegeta	ation Indicators:	:
5.					1 - Rapid Test fo	or Hydrophytic Ve	egetation
6.					X 2 - Dominance T	est is >50%	
7.					3 - Prevalence II	ndex is ≤3.0 <sup>1</sup>	
8.					4 - Morphologica	al Adaptations <sup>1</sup> (F	Provide supporting
9.					data in Rema	arks or on a sepa	rate sheet)
10.					5 - Wetland Non	-Vascular Plants	1
11.					Problematic Hyd	Irophytic Vegetat	ion <sup>1</sup> (Explain)
		100% =	Total Cover		<sup>1</sup> Indicators of hydric		
Woody Vine Stratu	m (Plot size: 10' r				be present.		
1.							
2			T 1 1 C		Hydrophytic	Vac V !	
0.5		=	Total Cover		Vegetation	Yes X No	
% Bare Ground in I	Herb Stratum 0%				Present?		
Remarks:					Entered	d by: KL/ED QC	by: TJD

Profile Descripti	ion: (Describe to	the depth	needed to do					or mun				
Depth	Matri				Redox Fea	itures						
(inches)	Color (moist)	%	Color (mo	oist)	%	Type <sup>1</sup>	Loc	2	Texture		Rema	arks
0-6	10YR 2/1	100							coSiL		oarse	
6-10	2.5Y 2.5/1	60							coSiC	c	oarse	
	10YR 3/2	40							coSiL	n	nixed ma	trix
<sup>1</sup> Type: C=Concer	ntration, D=Deplet	on, RM=Re	duced Matrix C	S=Covered	d or Coated	Sand Grain	s. <sup>2</sup> Locati	on: PL=	Pore Lining, M	1=Matrix		
Hydric Soil Indic	ators: (Applicable	e to all LRR	Rs, unless oth	erwise note	ed.)		Indicat	ors for F	Problematic H	ydric So	oils <sup>3</sup> :	
Histosol (A1)	Histosol (A1)		Sandy Re	edox (S5)			1 cm m	uck (A9)	(LRR C)			
Histic Epiped	on (A2)		Stripped	Matrix (S6)			2 cm M	uck (A10	) (LRR B)			
Black Histic (	A3)		Loamy M	ucky Minera	al (F1)		Reduce	d Vertic	(F18)			
Hydrogen Sul			Loamy G	leyed Matrix	x (F2)		Red Pa	rent Mat	erial (TF2)			
Stratified Lay	ers (A5) ( <b>LRR C</b> )		Depleted	Matrix (F3)			Other (I	Explain iı	n Remarks)			
1 cm Muck (A	49) ( <b>LRR D</b> )		Redox Da	ark Surface	(F6)							
Depleted Beld	ow Dark Surface (	A11)	Depleted	Dark Surfa	ce (F7)		2					
Thick Dark Su	urface (A12)		Redox De	epressions	(F8)		<sup>3</sup> Indicators	of hydro	ohytic vegetation	on and		
Sandy Mucky	/ Mineral (S1)		Vernal Po	ools (F9)			wetland h	ydrology	must be prese	ent,		
Sandy Gleyed	d Matrix (S4)						unless dis	strubed o	or problematic.			
Restrictive Layer	r (if present):											
_	r (if present): lone											
_				_			Hydric Soi	l Presen	t? Yes		No <u>X</u>	
Type: N Depth (inches): Remarks: S	lone		= loam or loam	y; co = coal	rse; f = fine;	vf = very fil	,					
Type: N Depth (inches): Remarks: S Shovel refusal at	N/A S = sand; Si = silt; 10" due to rock fill		= loam or loam	y; co = coal	rse; f = fine;	vf = very fil	,					
Type: No Depth (inches):  Remarks: Solovel refusal at HYDROLOGY	N/A S = sand; Si = silt; 10" due to rock fill		= loam or loam	y; co = coal	rse; f = fine;	vf = very fil	,					
Type: No Depth (inches):  Remarks: So Shovel refusal at American Hydrology  Wetland Hydrology	N/A S = sand; Si = silt; 10" due to rock fill				rse; f = fine;	vf = very fil	ne; + = heav	y (more	clay); - = light (	less cla	у)	<u> </u>
Type: N Depth (inches): Remarks: S Shovel refusal at HYDROLOGY Wetland Hydrolo Primary Indicators	N/A S = sand; Si = silt; 10" due to rock fill  ogy Indicators: s (minimum of one		heck all that ap	oply)	rse; f = fine;	vf = very fil	ne; + = heav	y (more o	clay); - = light (	(less cla	y)	
Type: N Depth (inches): Remarks: S Shovel refusal at a  HYDROLOGY Wetland Hydrolo Primary Indicators Surface Wate	N/A  S = sand; Si = silt; 10" due to rock fill  regy Indicators: s (minimum of one)		heck all that ap	oply) et (B11)	rse; f = fine;	vf = very fil	ne; + = heav	y (more o	clay); - = light ( ators (2 or mo	re requi	red)	
Type: N Depth (inches): Remarks: S Shovel refusal at  HYDROLOGY Wetland Hydrolo Primary Indicators Surface Wate High Water T	N/A  S = sand; Si = silt; 10" due to rock fill  regy Indicators: s (minimum of one er (A1)  Table (A2)		heck all that ap Salt Crus Biotic Cru	oply) t (B11) ust (B12)		vf = very fil	ne; + = heav	y (more o	clay); - = light ( ators (2 or mo ter Marks (B1) diment Deposit	re requir (Riverius (B2) (I	red) ne) Riverine	
Type: N Depth (inches): Remarks: S Shovel refusal at  HYDROLOGY Wetland Hydrolo Primary Indicators Surface Wate High Water T Saturation (A:	N/A S = sand; Si = silt; 10" due to rock fill  ogy Indicators: s (minimum of one er (A1) Table (A2) 3)	required; cl	heck all that an Salt Crus Biotic Cru	oply) it (B11) ust (B12) nvertebrates	s (B13)	vf = very fil	ne; + = heav	ary Indic	ators (2 or mo ter Marks (B1) diment Deposit t Deposits (B3	re requii (Riverii s (B2) (I	red) ne) Riverine	
Type: N Depth (inches):  Remarks: S Shovel refusal at a  HYDROLOGY Wetland Hydrolo Primary Indicators Surface Wate High Water T Saturation (A) Water Marks	N/A S = sand; Si = silt; 10" due to rock fill  Ogy Indicators: S (minimum of one er (A1) Table (A2) 3) (B1) (Nonriverine	required; cl	heck all that ap Salt Crus Biotic Cru Aquatic I	oply)  It (B11)  ust (B12)  nvertebrates	s (B13) dor (C1)		Second	ary Indic	clay); - = light ( ators (2 or mo ter Marks (B1) diment Deposit t Deposits (B3) inage Patterns	re requii (Riverii ss (B2) (I (Riveriss (B10)	red) ne) Riverine	
Type: N Depth (inches): Remarks: S Shovel refusal at  HYDROLOGY Wetland Hydrolo Primary Indicators Surface Wate High Water T Saturation (A: Water Marks Sediment Dep	N/A  S = sand; Si = silt; 10" due to rock fill  regy Indicators: s (minimum of one er (A1) Table (A2) 3) (B1) (Nonriverine posits (B2) (Nonri	erequired; cl	heck all that ap Salt Crus Biotic Cru Aquatic Ii Hydroger Oxidized	oply)  it (B11)  ust (B12)  nvertebrates  n Sulfide Oc  Rhizospher	s (B13) dor (C1) res along Liv		Second	ary Indic	ators (2 or mo ter Marks (B1) diment Deposit t Deposits (B3 inage Patterns -Season Wate	re requii (Riverii ss (B2) (I ) (Riveris s (B10)	red) ne) Riverine	
Type: N Depth (inches):  Remarks: S Shovel refusal at 1  HYDROLOGY Wetland Hydrolo Primary Indicators Surface Water High Water T Saturation (A: Water Marks Sediment Dep	N/A S = sand; Si = silt; 10" due to rock fill  y ogy Indicators: s (minimum of one er (A1) Table (A2) 3) (B1) (Nonriverine posits (B2) (Nonriverine s (B3) (Nonriverine	erequired; cl	heck all that ap Salt Crus Biotic Cru Aquatic II Hydroger Oxidized Presence	oply)  at (B11)  ust (B12)  nvertebrates  a Sulfide Oc  Rhizospher  e of Reduce	s (B13) dor (C1) res along Liv d Iron (C4)	ing Roots (	Second	ary Indic	ators (2 or mo ter Marks (B1) diment Deposits t Deposits (B3 inage Patterns -Season Wate	re requir (Riverings (B2) (In) (Riverings (B10)) (Riverings (B10)) (Riverings (B10)) (Riverings (B10))	red) ne) Riverine ine)	)
Type: N Depth (inches):  Remarks: S Shovel refusal at a second se	N/A  S = sand; Si = silt; 10" due to rock fill  Ogy Indicators: (minimum of one er (A1) Sable (A2) (B1) (Nonriverine posits (B2) (Nonriverine (Cracks (B6))	e required; cl	Salt Crus Salt Crus Biotic Cru Aquatic II Hydroger Oxidized Presence	oply)  It (B11)  Ist (B12)  Invertebrates  In Sulfide Oc  Rhizospher  Is of Reduce  In Reduction	s (B13) dor (C1) res along Liv d Iron (C4) on in Tilled S	ing Roots (	Second	ary Indic	ators (2 or mo ter Marks (B1) diment Deposit t Deposits (B3 inage Patterns -Season Wate yfish Burrows uration Visible	re requii (Riverii (s (B2) (I ) (Riverii s (B10) or Table (C8) on Aeria	red) ne) Riverine ine)	)
Type: N Depth (inches): Remarks: S Shovel refusal at the second of the s	N/A  S = sand; Si = silt; 10" due to rock fill  ogy Indicators: s (minimum of one er (A1) Table (A2) 3) (B1) (Nonriverine posits (B2) (Nonri s (B3) (Nonriverine Cracks (B6) sible on Aerial Ima	e required; cl	heck all that ap Salt Crus Biotic Cru Aquatic II Hydroger Oxidized Presence Recent Ir	oply)  at (B11)  ust (B12)  nvertebrates  n Sulfide Oc  Rhizospher  e of Reduce  on Reduction  ck Surface (6)	s (B13) dor (C1) res along Liv d Iron (C4) on in Tilled S C7)	ing Roots (	Second	ary Indic  Wa Sec Drif Dra Dry Cra Sat	ators (2 or mo ter Marks (B1) diment Deposit t Deposits (B3 inage Patterns -Season Wate yfish Burrows uration Visible	re requir (Riverir (S (B2) (I ) (Riverir (B (B10) ) r Table (C8) on Aeric	red) ne) Riverine ine)	)
Type: N Depth (inches):  Remarks: S Shovel refusal at a second se	N/A  S = sand; Si = silt; 10" due to rock fill  Pogy Indicators: S (minimum of one er (A1) Sable (A2) Sable (A2) Sable (B3) (Nonriverine S (B3) (Nonriverine Cracks (B6) Sible on Aerial Imade Leaves (B9)	e required; cl	heck all that ap Salt Crus Biotic Cru Aquatic II Hydroger Oxidized Presence Recent Ir	oply)  It (B11)  Ist (B12)  Invertebrates  In Sulfide Oc  Rhizospher  Is of Reduce  In Reduction	s (B13) dor (C1) res along Liv d Iron (C4) on in Tilled S C7)	ing Roots (	Second	ary Indic  Wa Sec Drif Dra Dry Cra Sat	ators (2 or mo ter Marks (B1) diment Deposit t Deposits (B3 inage Patterns -Season Wate yfish Burrows uration Visible	re requir (Riverir (S (B2) (I ) (Riverir (B (B10) ) r Table (C8) on Aeric	red) ne) Riverine ine)	)
Type: N Depth (inches):  Remarks: S Shovel refusal at  HYDROLOGY Wetland Hydrolo Primary Indicators Surface Wate High Water T Saturation (A: Water Marks Sediment Deposits Surface Soil (Inundation Visuater-Stainer Field Observation)	N/A  S = sand; Si = silt; 10" due to rock fill  regy Indicators: s (minimum of one er (A1) Table (A2) 3) (B1) (Nonriverine posits (B2) (Nonriverine s (B3) (Nonriverine Cracks (B6) sible on Aerial Ima d Leaves (B9)	e required; cl	Salt Crus Salt Crus Biotic Cru Aquatic II Hydroger Oxidized Presence Recent Ir Thin Muc	oply)  at (B11)  ust (B12)  nvertebrates  a Sulfide Oc  Rhizospher  e of Reduce  on Reduction  k Surface (in  k plain in Rei	s (B13) dor (C1) res along Liv d Iron (C4) on in Tilled S C7) marks)	ing Roots (	Second	ary Indic  Wa Sec Drif Dra Dry Cra Sat	ators (2 or mo ter Marks (B1) diment Deposit t Deposits (B3 inage Patterns -Season Wate yfish Burrows uration Visible	re requir (Riverir (S (B2) (I ) (Riverir (B (B10) ) r Table (C8) on Aeric	red) ne) Riverine ine)	)
Type: N Depth (inches):  Remarks: S Shovel refusal at 1  HYDROLOGY Wetland Hydrolo Primary Indicators Surface Water High Water T Saturation (A: Water Marks Sediment Deposits Surface Soil (Inundation Visuater-Stainer Field Observation Surface Water Primary Inches	N/A  S = sand; Si = silt; 10" due to rock fill  Pogy Indicators: S (minimum of one er (A1) Sable (A2) Sable (A2) Sable (B3) (Nonriverine S (B3) (Nonriverine Cracks (B6) Sible on Aerial Imaded Leaves (B9) Sins: Fresent?  Yes	e required; cl	heck all that ap Salt Crus Biotic Cru Aquatic II Hydroger Oxidized Presence Recent Ir Thin Muc Other (Ex	oply)  at (B11)  ust (B12)  nvertebrates  a Sulfide Oc  Rhizospher  of Reduce  on Reduction  ck Surface (in  xplain in Rei	s (B13) dor (C1) res along Liv d Iron (C4) on in Tilled S C7) marks)	ing Roots ( roils (C6)	Second  (C3)	ary Indic Wa Sec Drit Dra Dry Cra Sat Sha	clay); - = light ( ators (2 or mo ter Marks (B1) diment Deposits (B3 inage Patterns -Season Wate yfish Burrows uration Visible allow Aquitard (C-Neutral Test	re requir (Riverings (B2) (I ) (Riverings (B2) (I ) (Riverings (B10)) or Table (C8) on Aeria (D3) (D5)	red) ne) Riverine ine)	)
Type: N Depth (inches):  Remarks: S Shovel refusal at a second refusal	N/A  S = sand; Si = silt; 10" due to rock fill  regy Indicators: s (minimum of one er (A1) Sable (A2) Sable (A2) Sable (B3) (Nonriverine posits (B2) (Nonriverine cracks (B6) sible on Aerial Imade Leaves (B9) Sins: Fresent?  Yes Sent?  Yes	e required; cl	heck all that ap Salt Crus Biotic Cru Aquatic Ir Hydroger Oxidized Presence Recent Ir Thin Muc Other (Ex	oply)  at (B11)  ust (B12)  nvertebrates  n Sulfide Oc  Rhizospher  of Reduce  on Reduction  k Surface (in  k plain in Rei  Depth	s (B13) dor (C1) res along Liv d Iron (C4) on in Tilled S C7) marks) h (inches):	ing Roots (coils (C6)	Second  (C3)	ary Indic Wa Sec Drit Dra Dry Cra Sat Sha	ators (2 or mo ter Marks (B1) diment Deposits to Deposits (B3) inage Patterns -Season Wate yfish Burrows uration Visible allow Aquitard C-Neutral Test	re requiii (Riverii s (B2) (I ) (Riverii s (B10) or Table (C8) on Aeris (D3) (D5)	red) ne) Riverine ine) (C2)	) y (C9)
Type: N Depth (inches):  Remarks: S Shovel refusal at 1  HYDROLOGY Wetland Hydrolo Primary Indicators Surface Water High Water T Saturation (A: Water Marks Sediment Deposits Surface Soil (Inundation Visuater-Stainer Field Observation Surface Water Preservation Preservations (Includes capillary	N/A  S = sand; Si = silt; 10" due to rock fill  Togy Indicators: S (minimum of one er (A1) Table (A2) 3) (B1) (Nonriverine posits (B2) (Nonri s (B3) (Nonriverine Cracks (B6) sible on Aerial Ima d Leaves (B9)  Ins: Tresent? The sent of	required; cl	heck all that an Salt Crus Biotic Cru Aquatic II Hydroger Oxidized Presence Recent Ir Thin Muc Other (Extended No X No X No X	oply)  at (B11)  ust (B12)  nvertebrates  a Sulfide Oc  Rhizospher  of Reduce  on Reduction  k Surface (in  cyplain in Rei  Depth  Depth	s (B13) dor (C1) res along Liv d Iron (C4) on in Tilled S C7) marks) h (inches): h (inches):	ing Roots (coils (C6)	Second  (C3)  We	ary Indic Wa Sec Drit Dra Dry Cra Sat Sha	clay); - = light ( ators (2 or mo ter Marks (B1) diment Deposits (B3 inage Patterns -Season Wate yfish Burrows uration Visible allow Aquitard (C-Neutral Test	re requiii (Riverii s (B2) (I ) (Riverii s (B10) or Table (C8) on Aeris (D3) (D5)	red) ne) Riverine ine)	) y (C9)
Type: N Depth (inches):  Remarks: S Shovel refusal at 1  HYDROLOGY Wetland Hydrolo Primary Indicators Surface Water High Water T Saturation (A: Water Marks Sediment Deposits Surface Soil (Inundation Visuater-Stainer Field Observation Surface Water Present (includes capillary	N/A  S = sand; Si = silt; 10" due to rock fill  Pogy Indicators: S (minimum of one er (A1) Sable (A2) Sable (A	required; cl	heck all that an Salt Crus Biotic Cru Aquatic II Hydroger Oxidized Presence Recent Ir Thin Muc Other (Extended No X No X No X	oply)  at (B11)  ust (B12)  nvertebrates  a Sulfide Oc  Rhizospher  of Reduce  on Reduction  k Surface (in  cyplain in Rei  Depth  Depth	s (B13) dor (C1) res along Liv d Iron (C4) on in Tilled S C7) marks) h (inches): h (inches):	ing Roots (coils (C6)	Second  (C3)  We	ary Indic Wa Sec Drit Dra Dry Cra Sat Sha	ators (2 or mo ter Marks (B1) diment Deposits to Deposits (B3) inage Patterns -Season Wate yfish Burrows uration Visible allow Aquitard C-Neutral Test	re requiii (Riverii s (B2) (I ) (Riverii s (B10) or Table (C8) on Aeris (D3) (D5)	red) ne) Riverine ine) (C2)	) y (C9)
Type: N Depth (inches):  Remarks: S Shovel refusal at 1  HYDROLOGY Wetland Hydrolo Primary Indicators Surface Water High Water T Saturation (A: Water Marks Sediment Deposits Surface Soil (Inundation Visuater-Stainer Field Observation Surface Water Preservation Preservations (Includes capillary)	N/A  S = sand; Si = silt; 10" due to rock fill  Togy Indicators: S (minimum of one er (A1) Table (A2) 3) (B1) (Nonriverine posits (B2) (Nonri s (B3) (Nonriverine Cracks (B6) sible on Aerial Ima d Leaves (B9)  Ins: Tresent? The sent of	required; cl	heck all that an Salt Crus Biotic Cru Aquatic II Hydroger Oxidized Presence Recent Ir Thin Muc Other (Extended No X No X No X	oply)  at (B11)  ust (B12)  nvertebrates  a Sulfide Oc  Rhizospher  of Reduce  on Reduction  k Surface (in  cyplain in Rei  Depth  Depth	s (B13) dor (C1) res along Liv d Iron (C4) on in Tilled S C7) marks) h (inches): h (inches):	ing Roots (coils (C6)	Second  (C3)  We	ary Indice  Wa Sec Drift Dra Cra Sat Sha FAC	ators (2 or mo ter Marks (B1) diment Deposits to Deposits (B3) inage Patterns -Season Wate yfish Burrows uration Visible allow Aquitard C-Neutral Test	re requii (Riverii s (B2) (I ) (Riverii s (B10) or Table (C8) on Aerii (D3) (D5)	red) ne) Riverine ine) (C2) al Imagel	) y (C9)

#### WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Fumaria Solar Project		City/County:	- / Kittitas	Sampling Date: 4/11/2017	
Applicant/Owner: TUUSSO Energy, LLC				State: WA Sampling Point: FP12	<u>,                                      </u>
Investigator(s): Evan Dulin, Jamie Young		Section, T	ownship, Rand	ge: Section 20, T18N, R18E	
Landform (hillslope, terrace, etc.): Channel			-	(concave, convex, none): Concave Slope (%): 1	
Subregion (LRR): B, Columbia/Snake River Pla	ateau	Lat: 47.038081	_	ng: -120.608795 Datum: NAD 1983	
Soil Map Unit Name: Weirman-Kayak-Z				NWI classification: None	
Are climatic / hydrologic conditions on the site ty	•		Ye		)
Are Vegetation ,Soil	, or Hydrology	significantly	disturbed?	Are "Normal Circumstances" present? Yes X No	,
Are Vegetation ,Soil	, or Hydrology	naturally pro	blematic? (	(If needed, explain any answers in Remarks.)	
SUMMARY OF FINDINGS - Attach s	ite map show	ing sampling	point loca	tions, transects, important features, etc.	
Hydrophytic Vegetation Present?	Yes <b>X</b>	No			
Hydric Soil Present?	Yes	No <b>X</b>	Is the Samp		
Wetland Hydrology Present?	Yes X	No	within a We	etland? Yes No X	
Precipitation prior to fieldwork: 0.61" two we Remarks: Sample plot taken in dry vegetated ditch south o	·		YTD, 3.10" ab	ove normal for WYTD. *Wetter than normal.	
VEGETATION					
	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size: 30' r )	% Cover	Species?	<u>Status</u>	Number of Dominant Species	
1.	<u> </u>			That Are OBL, FACW, or FAC: (A)	
2	<u> </u>				
3.	<u> </u>			Total Number of Dominant	
4.				Species Across All Strata: 3 (B)	
	0% =	Total Cover			
Sapling/Shrub Stratum (Plot size: 10' r	_)			Percent of Dominant Species	
1. Salix exigua	20%	Yes	FACW	That Are OBL, FACW, or FAC: 67% (A/B)	)
2. Rosa nutkana	15%	Yes	FACU	Prevalence Index worksheet:	
3.				Total % Cover of: Multiply by:	
4	<u> </u>			OBL species 0 x 1 = 0	
5.	<u> </u>			FACW species 100 x 2 = 200	
	35% =	Total Cover		FAC species 0 x 3 = 0	
<u>Herb Stratum</u> (Plot size: <u>5' r</u> )				FACU species 15 x 4 = 60	
Phalaris arundinacea	80%	Yes	FACW	UPL species 0 x 5 = 0	
2	<u> </u>			Column Totals: 115 (A) 260	(B)
3.				Prevalence Index = B/A = 2.26	
4.				Hydrophytic Vegetation Indicators:	
5.				1 - Rapid Test for Hydrophytic Vegetation	
6.				X 2 - Dominance Test is >50%	
7.				3 - Prevalence Index is ≤3.0 <sup>1</sup>	
8.				4 - Morphological Adaptations <sup>1</sup> (Provide support	ting
9.				data in Remarks or on a separate sheet)	
10.				5 - Wetland Non-Vascular Plants <sup>1</sup>	
11.				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
Woody Vine Stratum (Plot size: 10' r		Total Cover		<sup>1</sup> Indicators of hydric soil and wetland hydrology mus be present.	st
1					
2				Hydrophytic	
% Bare Ground in Herb Stratum 20%	=	Total Cover		Vegetation Yes X No Present?	
Remarks:				Entered by: KL/ED QC by: TJD	

SOIL Sampling Point: FP12

Profile Description	n: (Describe to	the depth ne	eded to docu	ment the indicator	or confirm	the absence of i	ndicators.)	
Depth	Matrix	(		Redox Fe	atures			
(inches)	Color (moist)	%	Color (mois	it) %	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-9	10YR 2/1	100		<u> </u>			coSiL	
		,						
						_		
				=Covered or Coated	Sand Grain		PL=Pore Lining, M=Ma	
Hydric Soil Indicat	tors: (Applicable	to all LRRs	unless other	wise noted.)		Indicators f	or Problematic Hydrid	: Soils³:
Histosol (A1)		_	Sandy Red	ox (S5)		1 cm muck (	A9) ( <b>LRR C</b> )	
Histic Epipedor	n (A2)	_	Stripped Ma	atrix (S6)		2 cm Muck (	A10) ( <b>LRR B</b> )	
Black Histic (A	3)	_	Loamy Mud	ky Mineral (F1)		Reduced Ve	rtic (F18)	
Hydrogen Sulfid		_	Loamy Gle	yed Matrix (F2)		Red Parent I	Material (TF2)	
_	rs (A5) ( <b>LRR C</b> )	_	Depleted M	atrix (F3)		Other (Expla	in in Remarks)	
1 cm Muck (A9		_		Surface (F6)				
	v Dark Surface ( <i>I</i>	A11) <u> </u>		ark Surface (F7)		3		
Thick Dark Sur		_		ressions (F8)		·	drophytic vegetation ar	ıd
Sandy Mucky N		_	Vernal Poo	ls (F9)		-	ogy must be present,	
Sandy Gleyed I	Matrix (S4)					unless distrub	ed or problematic.	
Restrictive Layer (	if present):							
Type: No	ne			i				
Depth (inches):	N/A					Hydric Soil Pre	sent? Yes	No X
				co = coarse; f = fine;	vf = very fi	ne; + = heavy (mo	ore clay); - = light (less	clay)
Rocks throughout.	Shovel refusal at	9" due to roc	k layer.					
HYDROLOGY								
Wetland Hydrology	y Indicators:							
Primary Indicators (	minimum of one	required; che	ck all that appl	y)		Secondary I	ndicators (2 or more re	quired)
Surface Water	(A1)		Salt Crust (	B11)			Water Marks (B1) (Riv	<del></del>
High Water Tab		_	Biotic Crus	•		-	Sediment Deposits (B2	•
Saturation (A3)		_		ertebrates (B13)			Drift Deposits (B3) (Ri	verine)
Water Marks (E	B1) (Nonriverine	_		Sulfide Odor (C1)			Drainage Patterns (B1	
Sediment Depo	osits (B2) ( <b>Nonri</b>	verine)	Oxidized R	hizospheres along Li	ving Roots (	(C3)	Dry-Season Water Tal	ole (C2)
Drift Deposits (	B3) (Nonriverin	e)	Presence of	f Reduced Iron (C4)			Crayfish Burrows (C8)	
Surface Soil Cr	acks (B6)	_	Recent Iron	Reduction in Tilled	Soils (C6)	<u></u>	Saturation Visible on A	erial Imagery (C9)
Inundation Visil	ble on Aerial Ima	gery (B7)	Thin Muck	Surface (C7)		<u></u>	Shallow Aquitard (D3)	
X Water-Stained	Leaves (B9)		Other (Expl	ain in Remarks)		X	FAC-Neutral Test (D5)	
Field Observations	s:		<u> </u>					
Surface Water Pre	sent? Yes	1	No X	Depth (inches):	N/A			
Water Table Prese	-		No X	Depth (inches):	>9	- Wetland	I Hydrology Present?	
Saturation Present	_		No X	Depth (inches):	>9	-	Yes X	No
(includes capillary	_					-		
Describe Recorded	d Data (stream ga	auge, monitor	ing well, aerial	photos, previous ins	pections), if	available:		
Remarks:							Entered by: VI/ED (	OC by: TID
i veillains.							Entered by: KL/ED (	(C by. 10b

APPENDIX D: WETLAND AND STREAM PHOTOGRAPHS



**Photo A.** View north of Wetland FW01, extending off-site to the north (FP01).



Photo B. View southwest of Wetland FW01 and property to the west.



Photo C. View north of ditch (FS01) along western site boundary.



Photo D. View south of ditch (FS01) in southwest corner of site.



Photo E. View west of ditch (FS01) extending west along a driveway.



**Photo F.** View east of off-site pond to the southeast of the site.



Photo G. View west of ditch (FS02) from eastern site boundary...



Photo H. View south of upland area north of ditch (FS02).



Photo I. View northeast of flow control gates connecting FS02 to FS01.



Photo J. View east of ditch (FS01) just before feeding into Reecer Creek.



Photo K. View north of Reecer Creek at Clarke Road crossing.



Photo L. View south of Reecer Creek culverts at Clarke Road crossing.



Photo M. View south of Reecer Creek south of Clarke Road.



Photo N. View east of Wetland FW02.



Photo O. View east of western portion of Wetland FW02.



**Photo P.** View north of roadside ditch along Faust Road.



Photo Q. View east of Wetland FW03.



Photo R. View east of KRD Canal (FS03).



Photo S. View east of Wetland FW04.



Photo T. View north of Reecer Creek crossing of Faust Road.



Photo U. View north of Reecer Creek crossing of Hungry Junction Road.



Photo V. View west of roadside ditch on Hungry Junction Road, west of Faust Road.



Photo W. View northeast of Wetland FW05 and stream/ditch FS04.



**Photo X.** View west of roadside ditch on Hungry Junction Road, towards FS04.



Photo Y. View northwest of Town Canal (FS05).



Photo Z. View east of Wetland FW06 (FP010).



#### **RATING SUMMARY – Eastern Washington**

Name of wetland (or ID #): FWOI  Rated by N. Evan Dulh	Date of site visit: 4/5/17
Rated by N. Evan Dulin	Trained by Ecology? Yes No Date of training 7/24/17
HGM Class used for rating Slope	Wetland has multiple HGM classes?YN
NOTE: Form is not complete without Source of base aerial photo/map	t the figures requested (figures can be combined).
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
	_Category IV — Total score = 9-15

FUNCTION	Improving Water Quality			Н	Hydrologic			Habitat		
			Circle	the a	ppropr	iate r	atings	S		
Site Potential	Н	M	(L)	Н	M	(1)	H	M	(L)	1
Landscape Potential	Н	M	L	Н	(M)	L	Н	(M)	L	1
Value	Н	M	L	(H)	М	L	Н	(M)	L	TOTAL
Score Based on Ratings		5		Ĭ	6			5		16

Score for each function based on three ratings
(order of ratings is not important)
9 = H,H,H
8 = H,H,M
7 = H,H,L

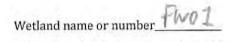
7 = H,M,M 6 = H,M,L 6 = M,M,M 5 = H,L,L 5 = M,M,L

4 = M,L,L

3 = L,L,L

#### 2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY Circle the appropriate category			
Vernal Pools	и ш			
Alkali	I			
Wetland of High Conservation Value	1			
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	V:			



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

#### Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	L 1.1, L 4.1, H 1.1, H 1.5	7.10
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)	L3.3	

#### Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	1
Hydroperiods	H 1.2, H 1.3	2
Plant cover of dense trees, shrubs, and herbaceous plants	S 1.3	1
Plant cover of dense, rigid trees, shrubs, and herbaceous plants (can be added to figure above)	S 4.1	1
Boundary of area within 150 ft of the wetland (can be added to another figure)	S 2.1, S 5.1	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	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	3
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	S 3.3	4

#### **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.	of permanent open water (wit	and is on the water side of the Ordinary High Water Mark of a body thout any plants on the surface) that is at least 20 ac (8 ha) in size r area is deeper than 10 ft (3 m)
	NO – go to 2	YES - The wetland class is Lake Fringe (Lacustrine Fringe)
2.	The wetland is on a slope (slope) The water flows through the water	ne can be very gradual), vetland in one direction (unidirectional) and usually comes from , as sheetflow, or in a swale without distinct banks;
		YES – The wetland class is <b>Slope</b> and in these type of wetlands except occasionally in very small and immocks (depressions are usually <3 ft diameter and less than 1 foot
3.	The unit is in a valley, or stream or river;	et all of the following criteria?  am channel, where it gets inundated by overbank flooding from that is at least once every 10 years.
	NO - go to 4 <b>NOTE:</b> The Riverine wetland can flooding.	YES – The wetland class is <b>Riverine</b> contain depressions that are filled with water when the river is not

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 FW01

**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 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.

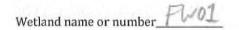
SLOPE WETLANDS  Water Quality Functions - Indicators that the site functions to improve water quality	Points (only 1 score per box)
1.0. Does the site have the potential to improve water quality?	
S 1.1. Characteristics of average slope of wetland: (a 1% slope has a 1 ft vertical drop in elevation for every 100 ft horizontal distance)  — Slope is 1% or less points = Slope is > 1% - 2% points = Slope is > 2% - 5% points = Slope is greater than 5% points =	3 3 3
S 1.2. The soil 2 in below the surface (or duff layer) is true clay or tureorganic (use NRCS definitions): Yes = 3 No	=0 0
Choose the points appropriate for the description that best fits the plants in the wetland. Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.  Dense, uncut, herbaceous plants > 90% of the wetland area Dense, uncut, herbaceous plants > ½ of area  Dense, woody, plants > ½ of area  Dense, uncut, herbaceous plants > ½ of area	6 0
Does not meet any of the criteria above for plants points =	0
Does not meet any of the criteria above for plants points =  Total for S 1  Add the points in the boxes above	e 3
Does not meet any of the criteria above for plants  Total for S 1  Add the points in the boxes above atting of Site Potential  S 2.0. Does the landscape have the potential to support the water quality function at the site?  S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants?  Yes = 1 No =	e 3 on the first pa
Does not meet any of the criteria above for plants  Total for S 1  Add the points in the boxes above ating of Site Potential  S 2.0. Does the landscape have the potential to support the water quality function at the site?  S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants?	e 3 on the first pa
Does not meet any of the criteria above for plants  Total for S 1  Add the points in the boxes above ating of Site Potential  S 2.0. Does the landscape have the potential to support the water quality function at the site?  S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants?  Yes = 1 No = S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1?	e 3 on the first pa
Total for S 1  Add the points in the boxes above atting of Site Potential  S 2.0. Does the landscape have the potential to support the water quality function at the site?  S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants?  Yes = 1 No =  S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1?  Other sources  Yes = 1 No =  Total for S 2  Add the points in the boxes above the potential of the wetland that are not listed in question S 2.1?  Add the points in the boxes above the potential of the wetland that are not listed in question S 2.1?  Add the points in the boxes above the potential of the wetland that are not listed in question S 2.1?  Add the points in the boxes above the potential of the wetland that are not listed in question S 2.1?  Add the points in the boxes above the potential of the wetland that are not listed in question S 2.1?  Add the points in the boxes above the potential of the wetland that are not listed in question S 2.1?  Add the points in the boxes above the potential of the wetland that are not listed in question S 2.1?  Add the points in the boxes above the potential of the wetland that are not listed in question S 2.1?  Add the points in the boxes above the potential of the wetland that are not listed in question S 2.1?  Add the points in the boxes above the potential of the wetland that are not listed in question S 2.1?  Add the points in the boxes above the potential of the wetland that are not listed in question S 2.1?  Add the points in the boxes above the potential of the wetland that are not listed in question S 2.1?	e 3 on the first pa
Does not meet any of the criteria above for plants  Total for S 1  Add the points in the boxes above ating of Site Potential  S 2.0. Does the landscape have the potential to support the water quality function at the site?  S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants?  Yes = 1 No =  S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1?  Other sources  Yes = 1 No =  Total for S 2  Add the points in the boxes above	e 3 on the first pa  0 1 0 0 e 1
Does not meet any of the criteria above for plants  Total for S 1  Add the points in the boxes above atting of Site Potential If score is:12 = H6-11 = M0-5 = L  Record the rating S 2.0. Does the landscape have the potential to support the water quality function at the site?  S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants?  Yes = 1 No = S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1?  Other sources	e 3 on the first pa  0 1 on the first pa
Does not meet any of the criteria above for plants  Total for S 1  Add the points in the boxes above atting of Site Potential  S 2.0. Does the landscape have the potential to support the water quality function at the site?  S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants?  Yes = 1   No = S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1?  Other sources  Yes = 1   No = Total for S 2  Add the points in the boxes above atting of Landscape Potential  If score is: 1-2 = M	e 3 on the first pa  0 1 0 0 e 1 on the first pa  0 1
Does not meet any of the criteria above for plants  Total for S 1  Add the points in the boxes above ating of Site Potential  S 2.0. Does the landscape have the potential to support the water quality function at the site?  S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants?  Yes = 1   No = 5 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1?  Other sources  Other sources  Total for S 2  Add the points in the boxes above ating of Landscape Potential  If score is: 1-2 = M	on the first pa

Rating of Value If score is: \_\_\_2-4 = H \_\_\_1 = M \_\_\_0 = L

Record the rating on the first page

SLOPE WETLANDS  Hydrologic Functions - Indicators that the site functions to reduce flooding and erosion	Points (only 1 score per box)
S 4.0. Does the site have the potential to reduce flooding and erosion?	
S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. Stems of plants should be thick enough (usually > \frac{1}{8} in), or dense enough, to remain erect during surface flows.  Dense, uncut, rigid plants cover > 90% of the area of the wetland points = 1  All other conditions	. 0
lating of Site Potential If score is: 1 = M 0 = L Record the rating on	the first pag
S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?	0
S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses that generate excess surface runoff? $(Yes = 1)No = 0$	1
Record the rating on	the first pag
S 6.0. Are the hydrologic functions provided by the site valuable to society?	
S 6.1. Distance to the nearest areas downstream that have flooding problems:  The sub-basin immediately down-gradient of site has surface flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds)  Surface flooding problems are in a sub-basin farther down-gradient  No flooding problems anywhere downstream  The sub-basin farther down-gradient points = 0	2
S 6.2. Has the site been identified as important for flood storage and flood conveyance in a regional flood control plan? $Yes = 2 \left( No = 0 \right)$	0
Total for S 6 Add the points in the boxes above	7

NOTES and FIELD OBSERVATIONS:



These questions apply to wetlands of all HGM classes.  IABITAT FUNCTIONS - Indicators that site functions to provide important habitat	(only 1 score per box)
1.0. Does the wetland have the potential to provide habitat for many species?	
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 = 3  Forested (areas where trees have >30% cover)  2 checks: points = 1  1 check: points = 0	1
I 1.2. Is one of the vegetation types Aquatic Bed?  Yes = 1 No = 0	0
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.  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 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. Richness of plant species  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.  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	2
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.  None = 0 points  Low = 1 point  Moderate = 2 points  All three diagrams in this row are dight = 3 points	Figure_
Riparian braided channels with 2 classes	

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)	0
Total for H 1 Add the points in the boxes above	3
Rating of Site Potential If score is:15-18 = H7-14 = M0-6 = 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 $0$ + [(% moderate and low intensity land uses)/2] $0$ = $0$ %  > $1/3$ (33.3%) of 1 km Polygon  20-33% of 1km Polygon  10-19% of 1km Polygon  210% of 1km Polygon  210% of 1km Polygon  220% of 1km Polygon  230% of 1km Polygon  240% of 1km Polygon  250% of 1km Polygon  250% of 1km Polygon	2
H 2.2. Undisturbed habitat in 1 km Polygon around wetland.  Calculate: % undisturbed habitat + [(% moderate and low intensity land uses)/2] = %  Undisturbed habitat > 50% of Polygon	1
H 2.3. Land use intensity in 1 km Polygon:  > 50% of Polygon is high intensity land use  Does not meet criterion above  points = 0	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	3
Rating of Landscape Potential 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  — Site has 1 or 2 priority habitats within 100 m (see Appendix B) points = 1  Site does not meet any of the criteria above	1

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

#### Appendix B: WDFW Priority Habitats in Eastern Washington

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. <a href="http://wdfw.wa.gov/publications/00165/wdfw00165.pdf">http://wdfw.wa.gov/publications/00165/wdfw00165.pdf</a> or access the list from here: <a href="http://wdfw.wa.gov/conservation/phs/list/">http://wdfw.wa.gov/conservation/phs/list/</a>)

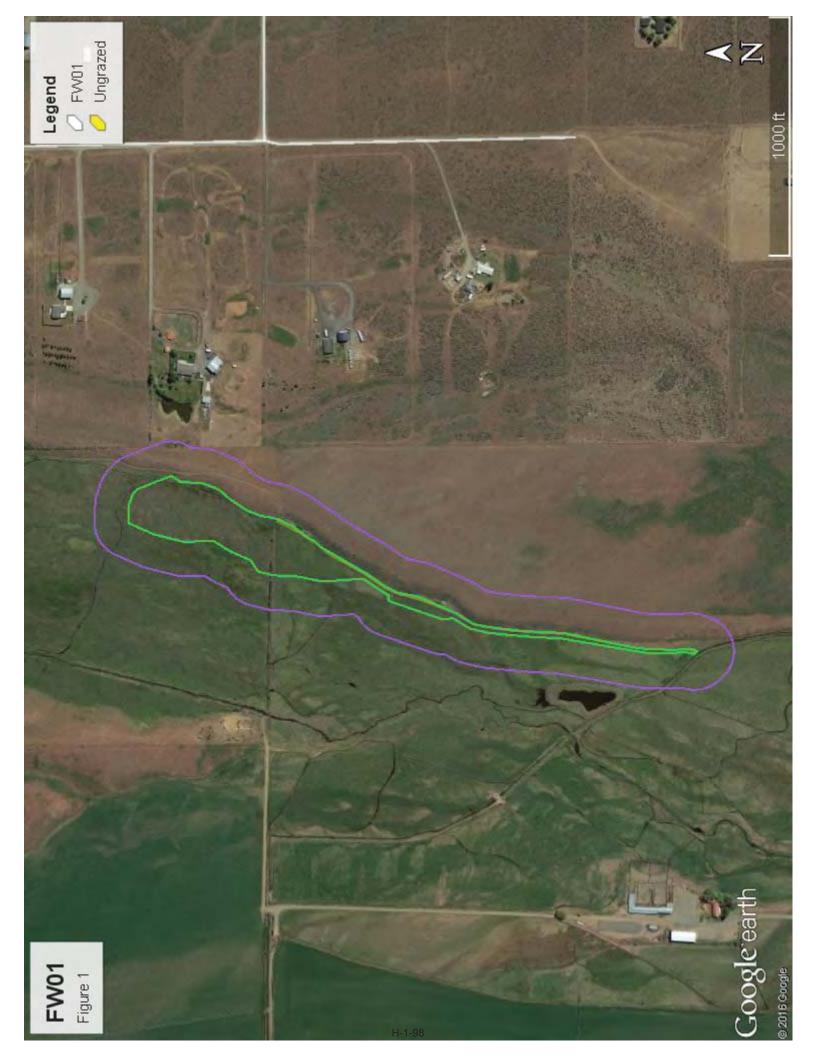
Count how many of the following priority habitats are within 330 ft (100 m) of the wetland: **NOTE:** This question is independent of the land use between the wetland and the priority habitat.

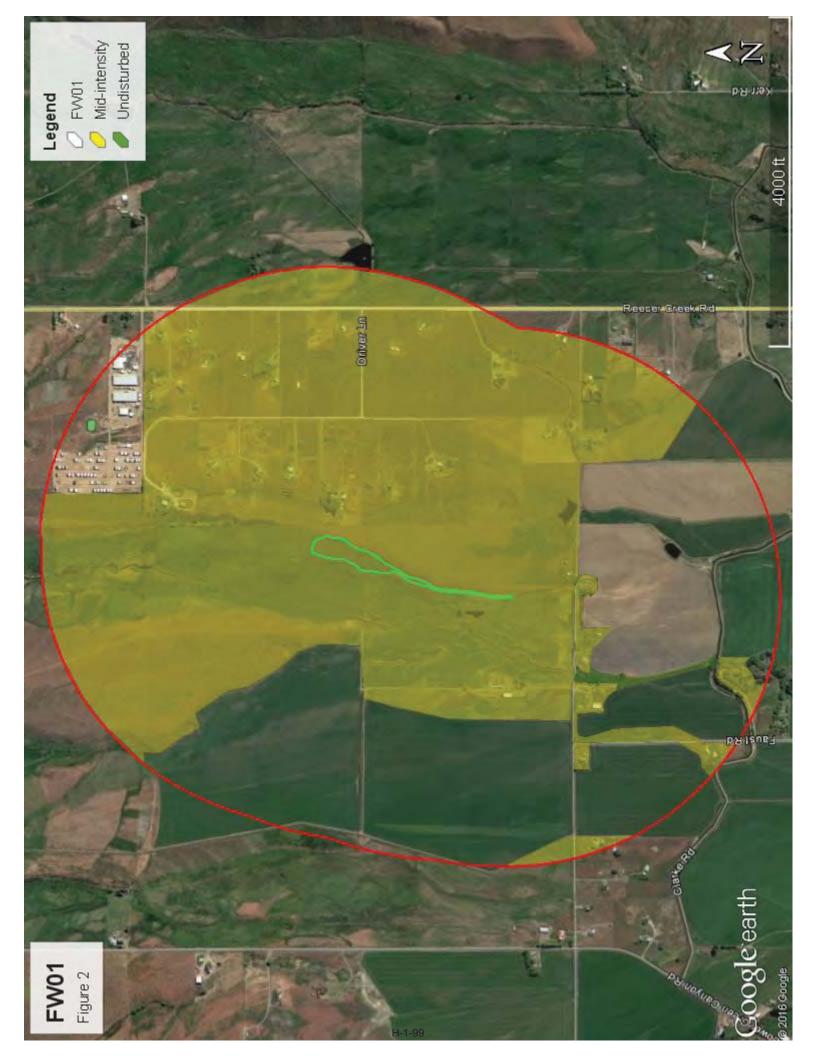
- Aspen Stands: Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- Biodiversity Areas and Corridors: Areas of habitat that are relatively important to various species of native fish and wildlife (full descriptions in WDFW PHS report).
- Old-growth/Mature forests: Old-growth east of Cascade crest Stands are highly variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. In general, stands will be >150 years of age, with 10 trees/ac (25 trees/ha) that are > 21 in (53 cm) dbh, and 1-3 snags/ac (2.5-7.5 snags/ha) that are > 12-14 in (30-35 cm) diameter. Downed logs may vary from abundant to absent. Canopies may be single or multi-layered. Evidence of human-caused alterations to the stand will be absent or so slight as to not affect the ecosystem's essential structures and functions. Mature forests Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west and 80-160 years old east of the Cascade crest.
- Oregon White Oak: Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak
  component is important (full descriptions in WDFW PHS report p. 158 see web link above).
  - **Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
  - Instream: The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- Caves: A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or
  other geological formations and is large enough to contain a human.
- Cliffs: Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- Talus: Homogenous areas of rock rubble ranging in average size 0.5 6.5 ft (0.15 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- Snags and Logs: Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 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

1





# FW01 - Figure 3

## Кеп ва Reecer Creek Rd Reecer Creek Rd DriverLn Faust Rd LOWER GTE

## Waters/Sediment Assessed

Water

Category 5 - 303d Category 4B Category 4C

Category 4A Category 2

Category 1

Sediment

ZZZ Category 5 - 303d

ZZZ Category 4C ZZZ Category 4B

ZZZ Category 4A

ZZZ Category 2

zzz Category 1



0.5

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Miles

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Water Quality & Supply

Waste & Toxics

Air & Climate

Cleanup & Spills



#### Water Quality Improvement Projects (TMDLs)

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 39: Upper Yakima

#### WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

Overview of the process

**Project Catalog** 

by WRIA by County

Funding Opportunities

Project Development Priority Lists

Related Information

TMDL Contacts

#### RELATED ECOLOGY PROGRAMS

Water Quality

#### WRIA 39: Upper Yakima

The following table lists overview information and links to specific water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

#### Yakima River basin project index:

www.ecy.wa.gov/programs/wq/tmdl/yakima\_wq/index.html Counties

- Kittitas
- Yakima



Project Name	Pollutants	Status**	TMDL Lead		
<u>Crystal Creek</u>	Ammonia-N BOD (5-day) Chlorine Fecal Coliform	EPA approved	Jane Creech 509-454-7860		
<u>Selah Ditch</u>	Fecal Coliform Temperature	EPA approved	Greg Bohn 509-454-4174		
Teanaway River segments:  Upper West Fork Teanaway River Upper Middle Fork Teanaway River Upper North Fork Teanaway River Stafford Creek Lower West Fork Teanaway River Lower Middle Fork Teanaway River Lower Middle Fork Teanaway River Lower North Fork Teanaway River Mainstem Teanaway River	Temperature	EPA approved	Jane Creech 509-454-7860		
Wilson/Cooke Creek Tributaries:  Badger Creek Bull Ditch Caribou Creek Cherry Creek CID Canal Coleman Creek Cook Creek EWC Canal Johnson Drain	Fecal Coliform	EPA approved Has an implementation plan Post-TMDL monitoring report	Jane Creech 509-454-7860 Greg Bohn 509-454-4174		

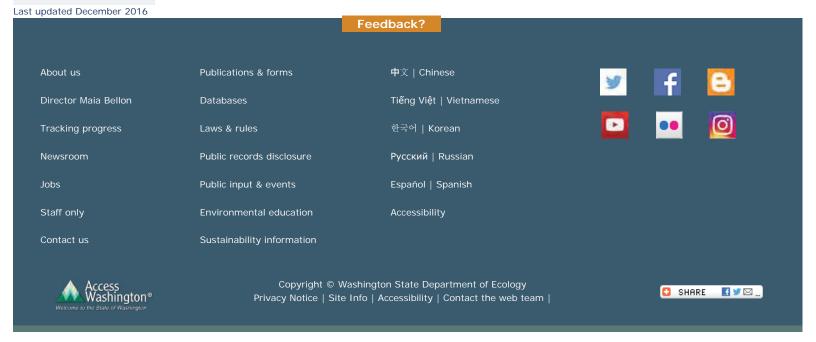
Mercer Creek  Naneum Creek Parke Creek Whiskey Creek Wilson Creek Wipple Wasteway			
Yakima River, Upper	Dieldrin DDT Suspended Sediments Turbidity	EPA approved	Jane Creech 509-454-7860
	Temperature	EPA approved Has an implementation plan	<u>Jane Creech</u> 509-454-7860
Yakima River	Toxics	Under development	<u>Jane Creech</u> 509-454-7860

<sup>\*\*</sup> Status will be listed as one of the following: Approved by EPA, Under Development or Implementation. No status means project work has not yet started.

#### For more information about WRIA 39:

- Waterbodies in WRIA 39 using the Water Quality Assessment Query Tool
- Watershed Information for WRIA 39
- \* The Department of Ecology and other state resource agencies frequently use a system of 62 "Water Resource Inventory Areas" or "WRIAs" to refer to the state's major watershed basins.

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#### **RATING SUMMARY – Eastern Washington**

Name of wetland (or ID #): FWOQ	Date of site visit:///7 _ Trained by Ecology? Yes No Date of training 3 /24 /17
Rated by N. Evan Dulih	_ Trained by Ecology? Yes No Date of training 3/24/17
HGM Class used for rating Riverine	Wetland has multiple HGM classes?N
NOTE: Form is not complete without Source of base aerial photo/map _	the figures requested (figures can be combined).
OVERALL WETLAND CATEGORY _	(based on functions or special characteristics )

#### 1. Category of wetland based on FUNCTIONS

	_Category I — Total score = 22-27
Lord The last of t	_Category II — Total score = 19-21
	_Category III — Total score = 16-18
	_Category IV — Total score = 9-15

FUNCTION	ST CONTRACTOR AND	npro ter Q	ving uality	H	ydrolo	gic		Habit	at	
			Circle	the a	ppropi	iate i	atings	;		]
Site Potential	Н	М	(L)	H	М	L	Н	М	(L)	1
Landscape Potential	Н	M	L	Н	M	L	Н	М	(4)	1
Value	H	М	L	H	М	L	H	М	L	TOTAL
Score Based on Ratings		e	5		8			5		19

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,L

3 = L, L, L

#### 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	ı 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 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)	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	family (
Hydroperiods	H 1.2, H 1.3	2
Ponded depressions	R 1.1	1
Boundary of area within 150 ft of the wetland (can be added to another figure)	R 2.4	1
Map of the contributing basin	R 2.2, R 2.3, R 5.2	2
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	1
Width of wetland vs. width of stream (can be added to another figure)	R 4.1	1
1 km Polygon: Area that extends 1 km from entire wetland edge - including	H 2.1, H 2.2, H 2.3	7
polygons for accessible habitat and undisturbed habitat		>
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	W.Saleston
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	R 3.2, R 3.3	5

#### 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 <b>meet both</b> 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)
Taxon	NO – go to 2  YES – The wetland class is Lake Fringe (Lacustrine Fringe)
veston -	Does the entire wetland unit <b>meet all</b> 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 <b>without being impounded</b> .  YES – The wetland class is <b>Slope</b> 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 <b>meet all</b> 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 <b>NOTE:</b> 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.

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**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 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.

RIVERINE WETLANDS  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 $> \frac{1}{3}$ area of wetland  Depressions cover $> \frac{1}{10}$ area of wetland  Depressions present but cover $< \frac{1}{10}$ area of wetland  No depressions present  Points = 0	1
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  Forest or shrub $^1/_3 - ^2/_3$ area of the wetland  Ungrazed, herbaceous plants > $^2/_3$ area of wetland  Ungrazed herbaceous plants $^1/_3 - ^2/_3$ area of wetland  Forest, shrub, and ungrazed herbaceous < $^1/_3$ area of wetland  points = 0	0
Total for R 1 Add the points in the boxes above	1

R 2.0. Does the landscape have the potential to support the water quality function	on of the site?	- 300
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 forest within the last 5 years?	s that 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 i R 2.1-R 2.4? Source	n questions Yes = 1 / No = 0	0
Total for R 2 Add the	points in the boxes above	2
Rating of Landscape Potential If score is:3-6 = H1 or 2 = M0 = L	Record the rating on th	e first page

R 3.0. Is the water quality improvement provided by the site valuable to socie	ety?		
R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary mi?		(ithin 1 (No = 0)	0
R 3.2. Does the river or stream have TMDL limits for nutrients, toxics, or pathogens?	Yes = 1	No = 0	0
R 3.3. Has the site been identified in a watershed or local plan as important for maint YES if there is a TMDL for the drainage in which wetland is found.		Answer No = 0	2
Total for R 3 Add t	he points in the boxe	s above	2

<u>Rating of Value</u> If score is: \_\_\_\_2-4 = H \_\_\_\_1 = M \_\_\_\_0 = L

Record the rating on the first page

Record the rating on the first page

> Heeler Creek flood plan Restoration project

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

		Points (only 1 score
Hydrologic Functions - Indicators that site functions to reduce flooding a	and stream erosion	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 flostream or river channel (distance between banks). Calculate the ratio: (average win width of stream between banks).  If the ratio is more than 2  If the ratio is 1-2  If the ratio is ½-<1  If the ratio is ¼-<½  If the ratio is </td <td></td> <td>10</td>		10
R 4.2. Characteristics of plants that slow down water velocities during floods: Treat large shrub. Choose the points appropriate for the best description (polygons need to height. These are NOT Cowardin classes).  Forest or shrub for more than $^2/_3$ the area of the wetland  Forest or shrub for $>^1/_3$ area OR emergent plants $>^2/_3$ area  Forest or shrub for $>^1/_{10}$ area OR emergent plants $>^1/_3$ area  Plants do not meet above criteria	points = 6 points = 4 points = 2	4
Plants do not meet above criteria	points = 0	
	points in the boxes above  Record the rating on	the first pag
Add the ating of Site Potential If score is: 12-16 = H 6-11 = M 0-5 = L  R 5.0. Does the landscape have the potential to support the hydrologic functions	points in the boxes above  Record the rating on s of the site?	the first pag
Add the ating of Site Potential If score is: 12-16 = H 6-11 = M 0-5 = L  R 5.0. Does the landscape have the potential to support the hydrologic functions R 5.1. Is the stream or river adjacent to the wetland downcut?	points in the boxes above  Record the rating on  s of the site?  Yes = $0 (No = 1)$	1
Add the ating of Site Potential If score is:12-16 = H6-11 = M0-5 = L  R 5.0. Does the landscape have the potential to support the hydrologic functions R 5.1. Is the stream or river adjacent to the wetland downcut?  R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	points in the boxes above  Record the rating on  s of the site?  Yes = 0 (No = 1)  Yes = 1 (No = 0)	the first pag
Add the ating of Site Potential If score is: 12-16 = H 6-11 = M 0-5 = L  R 5.0. Does the landscape have the potential to support the hydrologic functions R 5.1. Is the stream or river adjacent to the wetland downcut?  R 5.2. Does the up-gradient watershed include a UGA or incorporated area?  R 5.3. Is the up-gradient stream or river controlled by dams?	points in the boxes above  Record the rating on  s of the site?  Yes = $0 (No = 1)$ Yes = $1 (No = 0)$ Yes = $0 (No = 1)$	1
Add the ating of Site Potential If score is:12-16 = H6-11 = M0-5 = L  R 5.0. Does the landscape have the potential to support the hydrologic functions R 5.1. Is the stream or river adjacent to the wetland downcut?  R 5.2. Does the up-gradient watershed include a UGA or incorporated area?  R 5.3. Is the up-gradient stream or river controlled by dams?	points in the boxes above  Record the rating on  s of the site?  Yes = 0 (No = 1)  Yes = 1 (No = 0)	1 0 1 2
Add the ating of Site Potential If score is:12-16 = H6-11 = M0-5 = L  R 5.0. Does the landscape have the potential to support the hydrologic functions R 5.1. Is the stream or river adjacent to the wetland downcut?  R 5.2. Does the up-gradient watershed include a UGA or incorporated area?  R 5.3. Is the up-gradient stream or river controlled by dams?  Total for R 5	points in the boxes above  Record the rating on  s of the site?  Yes = $0 (No = 1)$ Yes = $1 (No = 0)$ Yes = $0 (No = 1)$ points in the boxes above	1 0 1 2
Add the ating of Site Potential If score is:12-16 = H6-11 = M0-5 = L  R 5.0. Does the landscape have the potential to support the hydrologic functions R 5.1. Is the stream or river adjacent to the wetland downcut?  R 5.2. Does the up-gradient watershed include a UGA or incorporated area?  R 5.3. Is the up-gradient stream or river controlled by dams?  Total for R 5 Add the	points in the boxes above  Record the rating on  s of the site?  Yes = 0 (No = 1)  Yes = 1 (No = 0)  Yes = 0 (No = 1)  points in the boxes above  Record the rating on	1 0 1 2
Total for R 5  Add the ating of Site Potential If score is:12-16 = H6-11 = M0-5 = L  R 5.0. Does the landscape have the potential to support the hydrologic functions R 5.1. Is the stream or river adjacent to the wetland downcut?  R 5.2. Does the up-gradient watershed include a UGA or incorporated area?  R 5.3. Is the up-gradient stream or river controlled by dams?  Total for R 5	points in the boxes above  Record the rating on  s of the site?  Yes = 0 (No = 1)  Yes = 1 (No = 0)  Yes = 0 (No = 1)  points in the boxes above  Record the rating on  the description that best fits  that result in damage to  points = 2  points = 1  points = 0	1 0 1 2

These questions apply to wetlands of all HGM classes.	(only 1 score per
HABITAT FUNCTIONS - Indicators that site functions to provide important habitat	box)
1.0. Does the wetland have the potential to provide habitat for many species?	
1.1. Structure of the plant community:  Check the Cowardin vegetation classes present and categories of emergent plants. Size threshold for each category is >= ½ 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)  Forested (areas where trees have >30% cover)  2 checks: points = 2 2 checks: points = 0	1
1 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.  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 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	3
1.4. Richness of plant species  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.  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	1
H 1.5. Interspersion of habitats	Figure_
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.  None = 0 points  Low = 1 point  Moderate = 2 points  All three diagrams in this row are High = 3 points	0
Riparian braided channels with 2 classes	

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)	1.
Total for H 1 Add the points in the boxes above	6
Rating of Site Potential If score is:15-18 = H7-14 = M0-6 = 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 + [(% moderate and low intensity land uses)/2] 5.5 = 5.5 %  **points = 3  **20-33% of 1km Polygon 5.5 = 5.5 %  **points = 2  **points = 1  **21. Accessible habitat (only area of habitat abutting wetland). If total accessible habitat is:  **points = 3  **points = 2  **points = 1  **points = 0	1
H 2.2. Undisturbed habitat in 1 km Polygon around wetland.  Calculate: % undisturbed habitat + [(% moderate and low intensity land uses)/2] <sup>23.5</sup> = 24.5 %  Undisturbed habitat > 50% of Polygon  Undisturbed habitat 10 - 50% and in 1-3 patches  Undisturbed habitat 10 - 50% and > 3 patches  Undisturbed habitat < 10% of Polygon  points = 1  points = 0	1
H 2.3. Land use intensity in 1 km Polygon:  > 50% of Polygon is high intensity land use  Does not meet criterion above  points = (-2)  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. <i>Generally, this means outside boundaries of reclamation areas, irrigation districts, or reservoirs</i> Yes = 3 (No = 0)	0
Total for H 2 Add the points in the boxes above	0
Rating of Landscape Potential If score is: 4-9 = H 1-3 = M <pre></pre>	
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  Site has 1 or 2 priority habitats within 100 m (see Appendix B)	2
Site does not meet any of the criteria above points = 0	
Rating of Value If score is:2 = H1 = M0 = L Record the rating on the first page	

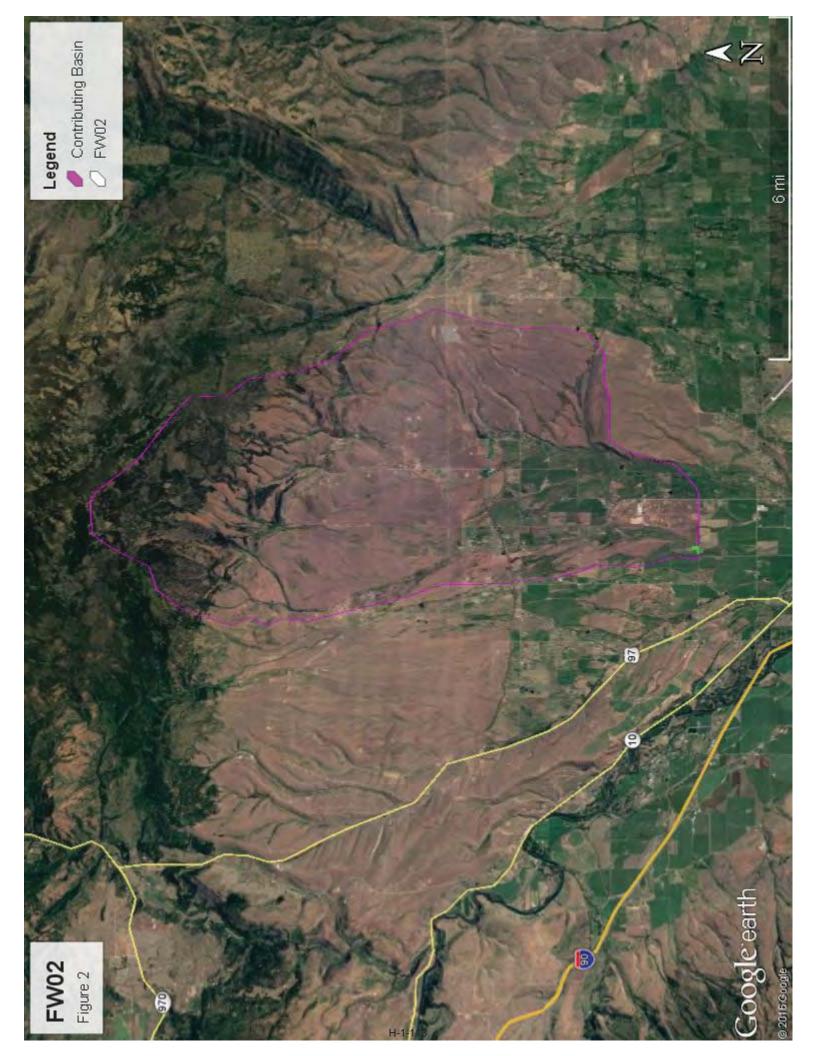
Wetland Rating System for Eastern WA: 2014 Update Rating Form – Effective January 1, 2015

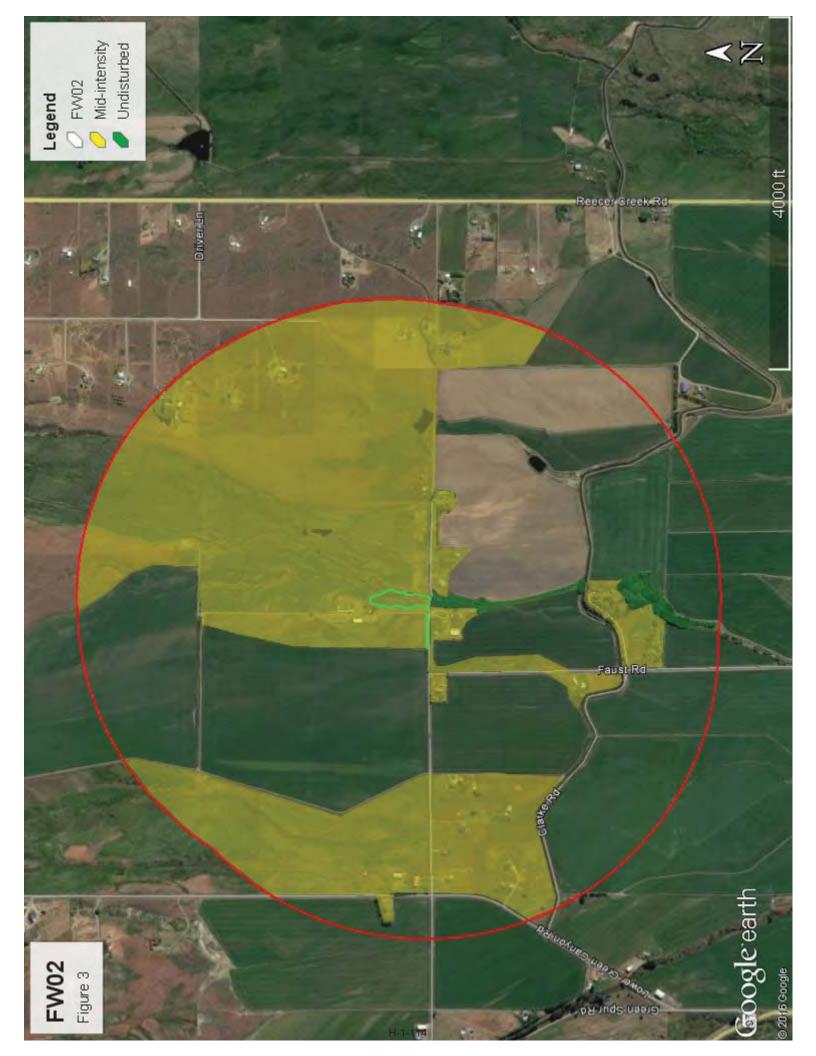
# Appendix B: WDFW Priority Habitats in Eastern Washington

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

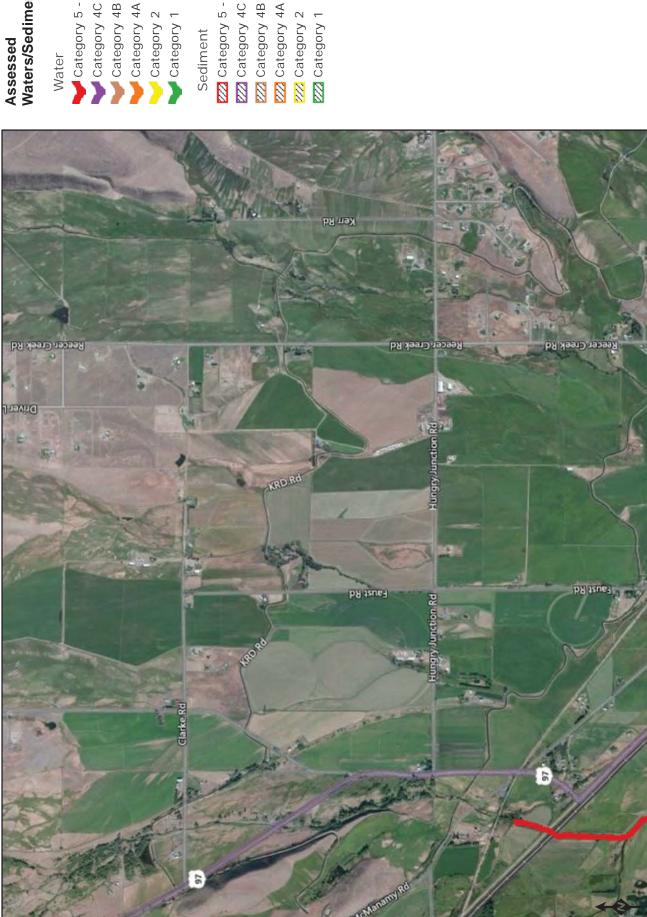
	Count how many of the following priority habitats are within 330 ft (100 m) of the wetland of the land use between the wetland and the priority habitat.	d: NOTE: This question is independent
-	<ul> <li>Aspen Stands: Pure or mixed stands of aspen greater than 1 ac (0.4 ha).</li> </ul>	
	<ul> <li>Biodiversity Areas and Corridors: Areas of habitat that are relatively important to v wildlife (full descriptions in WDFW PHS report).</li> </ul>	arious species of native fish and
	Old-growth/Mature forests: Old-growth east of Cascade crest – Stands are highly va and structural characteristics due to the influence of fire, climate, and soils. In general, with 10 trees/ac (25 trees/ha) that are > 21 in (53 cm) dbh, and 1-3 snags/ac (2.5-7.5 cm) diameter. Downed logs may vary from abundant to absent. Canopies may be single human-caused alterations to the stand will be absent or so slight as to not affect the ecfunctions. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbl 100%; decay, decadence, numbers of snags, and quantity of large downed material is g growth; 80-200 years old west and 80-160 years old east of the Cascade crest.	stands will be >150 years of age, snags/ha) that are > 12-14 in (30-35 e or multi-layered. Evidence of osystem's essential structures and h; crown cover may be less than
	<ul> <li>Oregon White Oak: Woodland stands of pure oak or oak/conifer associations where component is important (full descriptions in WDFW PHS report p. 158 - see web link about the component is important).</li> </ul>	
	<ul> <li>Riparian: The area adjacent to aquatic systems with flowing water that contains elemented ecosystems which mutually influence each other.</li> </ul>	nents of both aquatic and terrestrial
	<ul> <li>Instream: The combination of physical, biological, and chemical processes and condit functional life history requirements for instream fish and wildlife resources.</li> </ul>	ions that interact to provide
	<ul> <li>Caves: A naturally occurring cavity, recess, void, or system of interconnected passage other geological formations and is large enough to contain a human.</li> </ul>	s under the earth in soils, rock, ice, or
-	<ul> <li>Cliffs: Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.</li> </ul>	
	<ul> <li>Talus: Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 and/or sedimentary rock, including riprap slides and mine tailings. May be associated</li> </ul>	
	<ul> <li>Snags and Logs: Trees are considered snags if they are dead or dying and exhibit sufficavity excavation/use by wildlife. Priority snags have a diameter at breast height of &gt; and are &gt; 6.5 ft (2 m) in height. Priority logs are &gt; 12 in (30 cm) in diameter at the large.</li> </ul>	12 in (30 cm)in eastern Washington
-	<ul> <li>Shrub-steppe: A nonforested vegetation type consisting of one or more layers of pere conspicuous but discontinuous layer of shrubs (see Eastside Steppe for sites with little</li> </ul>	
	<ul> <li>Eastside Steppe: Nonforested vegetation type dominated by broadleaf herbaceous flot bunchgrasses, or a combination of both. Bluebunch wheatgrass (<i>Pseudoroegneria spice</i> component along with Idaho fescue (<i>Festuca idahoensis</i>), Sandberg bluegrass (<i>Poa sec</i> needlegrasses (<i>Achnatherum</i> spp.).</li> </ul>	ata) is often the prevailing cover
_	— Juniper Savannah: All juniper woodlands.	
	<b>Note:</b> All vegetated wetlands are by definition a priority habitat but are not included in thi elsewhere.	s list because they are addressed
Wet Effe	Wetland Rating System for Eastern WA: 2014 Update Effective January 1, 2015 Appendix B	1







# FW02 - Figure 4



# Assessed Waters/Sediment

Water

Category 5 - 303d Category 4B Category 4C

Category 4A Category 2

Category 1

Sediment

ZZZ Category 5 - 303d

ZZZ Category 4B

ZZZ Category 4A

ZZZ Category 2

zzz Category 1



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Water Quality & Supply

Waste & Toxics

Air & Climate

Cleanup & Spills



# Water Quality Improvement Projects (TMDLs)

WATER QUALITY
IMPROVEMENT
PROJECTS (TMDLs)

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 39: Upper Yakima

WRIA 39: Upper Yakima

PROJECTS (TMDLs)

Overview of the process

Project Catalog

by WRIA

by County

Funding Opportunities Project Development Priority Lists

Related Information
TMDL Contacts

RELATED ECOLOGY PROGRAMS

Water Quality

The following table lists overview information and links to specific water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

Yakima River basin project index:

www.ecy.wa.gov/programs/wq/tmdl/yakima\_wq/index.html Counties

- Kittitas
- Yakima



Project Name	Pollutants	Status**	TMDL Lead
<u>Crystal Creek</u>	Ammonia-N BOD (5-day) Chlorine Fecal Coliform	EPA approved	Jane Creech 509-454-7860
<u>Selah Ditch</u>	Fecal Coliform Temperature	EPA approved	Greg Bohn 509-454-4174
Teanaway River segments:  Upper West Fork Teanaway River Upper Middle Fork Teanaway River Upper North Fork Teanaway River Stafford Creek Lower West Fork Teanaway River Lower Middle Fork Teanaway River Lower Middle Fork Teanaway River Lower North Fork Teanaway River Mainstem Teanaway River	Temperature	EPA approved	Jane Creech 509-454-7860
Wilson/Cooke Creek Tributaries:  Badger Creek Bull Ditch Caribou Creek Cherry Creek CID Canal Coleman Creek Cook Creek EWC Canal Johnson Drain	Fecal Coliform	EPA approved Has an implementation plan Post-TMDL monitoring report	Jane Creech 509-454-7860 Greg Bohn 509-454-4174

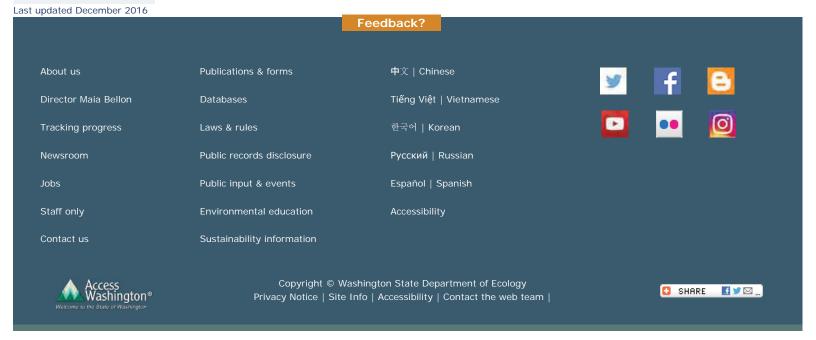
Mercer Creek  Naneum Creek Parke Creek Whiskey Creek Wilson Creek Wipple Wasteway			
Yakima River, Upper	Dieldrin DDT Suspended Sediments Turbidity	EPA approved	Jane Creech 509-454-7860
	Temperature	EPA approved Has an implementation plan	<u>Jane Creech</u> 509-454-7860
Yakima River	Toxics	Under development	<u>Jane Creech</u> 509-454-7860

<sup>\*\*</sup> Status will be listed as one of the following: Approved by EPA, Under Development or Implementation. No status means project work has not yet started.

#### For more information about WRIA 39:

- Waterbodies in WRIA 39 using the Water Quality Assessment Query Tool
- Watershed Information for WRIA 39
- \* The Department of Ecology and other state resource agencies frequently use a system of 62 "Water Resource Inventory Areas" or "WRIAs" to refer to the state's major watershed basins.

Back to top of page



# **RATING SUMMARY – Eastern Washington**

10 11110 00111100 111	
Name of wetland (or ID #): Fwo 3	Date of site visit:
Rated by M. Evan Dulih	Trained by Ecology? Yes No Date of training 3/24/17
HGM Class used for rating Depressional	
NOTE: Form is not complete without Source of base aerial photo/map _	the figures requested (figures can be combined).
OVERALL WETLAND CATEGORY	(based on functions Vor 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
Category IV — Total score = 9-15

FUNCTION	3-1-1-10-17-22-201-08	nprov ter Qı	ing uality	Н	ydrologi	С	H	labit	at	
			Circle	the a	ppropriat	e ra	tings			
Site Potential	Н	W	L	Н	M) I	-	Н	М	(L)	
Landscape Potential	Н	(M)	L	Н	M) L	-	Н	М	(L)	
Value	H	M	L	Н	M (L	)	(H)	М	L	TOTAL
Score Based on		7			-5			5		17
Ratings		ě.								T

Score for each function based on three ratings (order of ratings is not important)
9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M

- 6 = H,M,L 6 = M,M,M
- 5 = H,L,L
- 5 = M,M,L4 = M,L,L
- 3 = L,L,L

## 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 Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	D 1.3, H 1.1, H 1.5	1 2
Hydroperiods (including area of open water for H 1.3)	D 1.4, H 1.2, H 1.3	1 1
Location of outlet (can be added to map of hydroperiods)	D 1.1, D 4.1	1
Boundary of area within 150 ft of the wetland (can be added to another figure)	D 2.2, D 5.2	2
Map of the contributing basin	D 5.3	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	3
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	4
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	D 3.3	5

### Riverine Wetlands

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

### Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	L 1.1, L 4.1, H 1.1, H 1.5	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland (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.	oes the entire unit <b>meet both</b> 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)
	O – go to 2 YES – The wetland class is Lake Fringe (Lacustrine Fringe)
2.	oes the entire wetland unit <b>meet all</b> 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.
	O - go to 3  O - go to 3  YES - The wetland class is <b>Slope</b> OTE: Surface water does not pond in these type of wetlands except occasionally in very small and nallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 footeep).
3.	oes the entire wetland unit <b>meet all</b> 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.
	O - go to 4 YES – The wetland class is <b>Riverine OTE:</b> The Riverine wetland can contain depressions that are filled with water when the river is not ooding.
4.	the entire wetland unit in a topographic depression in which water ponds, or is saturated to the urface, 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 Flus

**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 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.

DEPRESSIONAL WETLANDS	Points
Water Quality Functions - Indicators that the site functions to improve water quality	(only 1 score per box)
D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland:  Wetland has no surface water outlet  Wetland has an intermittently flowing outlet  Wetland has a highly constricted permanently flowing outlet  Wetland has a permanently flowing, unconstricted, surface outlet  points = 3  Wetland has a permanently flowing, unconstricted, surface outlet	3
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions of soils)  YES = 3 NO = 0	0
D 1.3. Characteristics of persistent vegetation (Emergent, Scrub-shrub, and/or Forested Cowardin classes)  Wetland has persistent, ungrazed, vegetation for $> ^2/_3$ of area points = 5  Wetland has persistent, ungrazed, vegetation from $^1/_3$ to $^2/_3$ of area points = 3  Wetland has persistent, ungrazed vegetation from $^1/_{10}$ to $< ^1/_3$ of area points = 1  Wetland has persistent, ungrazed vegetation $< ^1/_{10}$ of area points = 0	5
D 1.4. Characteristics of seasonal ponding or inundation:  This is the area of ponding that fluctuates every year. Do not count the area that is permanently ponded.  —Area seasonally ponded is > ½ total area of wetland  Area seasonally ponded is ¼ - ½ total area of wetland  Area seasonally ponded is < ¼ total area of wetland  Area seasonally ponded is < ¼ total area of wetland  Area seasonally ponded is < ½ total area of wetland	3
Total for D 1 Add the points in the boxes above	11
D 2.0. Does the landscape have the potential to support the water quality function of the site?	ıe first page
D 2.1. Does the wetland receive stormwater discharges? Yes = $1 \text{ (No = 0)}$	0
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland? We have $1/key$ (Yes = 1) No = 0	1
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1- D 2.3? Source Yes = 1 (No = 0)	0
Total for D 2 Add the points in the boxes above	2
Rating of Landscape Potential If score is: 3 or 4 = H or 2 = M or 2 = M Record the rating on the	re first page
D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, or lake that is on the 303(d) list? Yes = 1 / No = 0	0
D 3.2. Is the wetland in a basin or sub-basin where water quality is an issue in some aquatic resource [303(d) list,	0
eutrophic lakes, problems with nuisance and toxic algae]? Yes = $1 \text{ No} = 0$	
eutrophic lakes, problems with nuisance and toxic algae]?  D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (answer YES if there is a TMDL for the drainage or basin in which the wetland is found)?  Yes = 1 No = 0  Yes = 2 No = 0	2

DEPRESSIONAL WETLANDS  Hydrologic Functions - Indicators that the site functions to reduce flooding and erosion.	Points (only 1 score per box)
D 4.0. Does the site have the potential to reduce flooding and erosion?	
D 4.1. Characteristics of surface water outflows from the wetland:  Wetland has no surface water outlet  Wetland has an intermittently flowing outlet  Wetland has a highly constricted permanently flowing outlet  Wetland has a permanently flowing unconstricted surface outlet  (If outlet is a ditch and not permanently flowing treat wetland as "intermittently flowing")	14
D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or deepest part (if dry).  Seasonal ponding: > 3 ft above the lowest point in wetland or the surface of permanent ponding points = 8  Seasonal ponding: 2 ft - < 3 ft above the lowest point in wetland or the surface of permanent pondingpoints = 6  The wetland is a headwater wetland points = 4  Seasonal ponding: 1 ft - < 2 ft points = 4  Seasonal ponding: 6 in - < 1 ft points = 2  Seasonal ponding: < 6 in or wetland has only saturated soils points = 0	or 4
Total for D 4 Add the points in the boxes above	6-8
Rating of Site Potential If score is: 12-16 = H	he first pag
D 5.0. Does the landscape have the potential to support the hydrologic functions of the site?  D 5.1. Does the wetland receive stormwater discharges?  Yes = 1 /No = 0	10

D 5.0. Does the landscape have the potential to support the hydrologic f	THE RESEARCH OF THE PROPERTY O	-07
D 5.1. Does the wetland receive stormwater discharges?	Yes = 1 (No = 0)	2
D 5.2. Is $>$ 10% of the area within 150 ft of the wetland in a land use that generates	ates runoff? Yes = 1 (No = 0)	0
D 5.3. Is more than 25% of the contributing basin of the wetland covered with i	ntensive human land uses? Yes = 1 No = 0	1
Total for D 5	Add the points in the boxes above	1
ating of Landscape Potential If score is: 3 = H 1 or 2 = M 0 = L	Record the rating on the firs	st pa

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

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

Record the rating on the first page

Wetland Rating System for Eastern WA: 2014 Update Rating Form – Effective January 1, 2015 6

These questions apply to wetlands of all HGM classes.  HABITAT FUNCTIONS - Indicators that site functions to provide important habitat	(only 1 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)  Forested (areas where trees have >30% cover)  3 checks: points = 2 2 checks: points = 0	1
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.  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 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. Richness of plant species  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.  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.  None = 0 points  Low = 1 point  Moderate = 2 points  All three diagrams in this row are  High = 3 points	Figure_
Riparian braided channels with 2 classes	

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,	2
herbaceous, moss/ground cover)  Total for H 1 Add the points in the boxes above	4
Rating of Site Potential If score is:15-18 = H7-14 = M0-6 = 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 $\frac{1}{2}$ + [(% moderate and low intensity land uses)/2] $\frac{1.5}{2}$ = $\frac{2.5}{2}$ % points = 3  20-33% of 1km Polygon $\frac{10}{2}$ $\frac{1}{2}$ $\frac$	0
H 2.2. Undisturbed habitat in 1 km Polygon around wetland.  Calculate: % undisturbed habitat + [(% moderate and low intensity land uses)/2] = %  Undisturbed habitat > 50% of Polygon	1
H 2.3. Land use intensity in 1 km Polygon:  > 50% of Polygon is high intensity land use  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	-1
Rating of Landscape Potential If score is:4-9 = H1-3 = MV<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  Site has 1 or 2 priority habitats within 100 m (see Appendix B)  Site does not meet any of the criteria above	2

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# Appendix B: WDFW Priority Habitats in Eastern Washington

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

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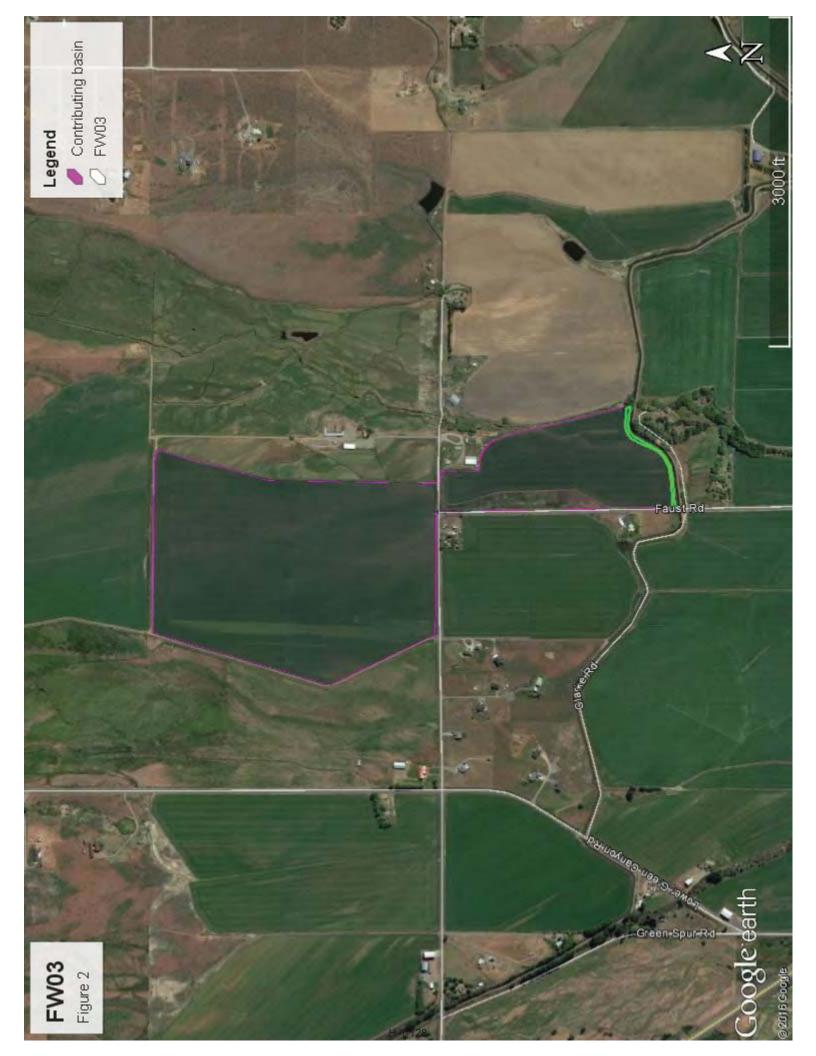
	nt how many of the following priority habitats are within 330 ft (100 m) of the wetland: NOTE: This question is independent to lead use between the wetland and the priority habitat.
	Aspen Stands: Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
	<b>Biodiversity Areas and Corridors</b> : Areas of habitat that are relatively important to various species of native fish and wildlife (full descriptions in WDFW PHS report).
	Old-growth/Mature forests: Old-growth east of Cascade crest — Stands are highly variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. In general, stands will be >150 years of age, with 10 trees/ac (25 trees/ha) that are > 21 in (53 cm) dbh, and 1-3 snags/ac (2.5-7.5 snags/ha) that are > 12-14 in (30-35 cm) diameter. Downed logs may vary from abundant to absent. Canopies may be single or multi-layered. Evidence of human-caused alterations to the stand will be absent or so slight as to not affect the ecosystem's essential structures and functions. Mature forests — Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west and 80-160 years old east of the Cascade crest.
-	Oregon White Oak: Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (full descriptions in WDFW PHS report p. 158 – see web link above).
4	<b>Riparian</b> : The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
K	<b>Instream:</b> 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.
-	<b>Talus:</b> 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.
=	<b>Shrub-steppe:</b> 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).
ā	<b>Eastside Steppe:</b> Nonforested vegetation type dominated by broadleaf herbaceous flora (i.e., forbs), perennial bunchgrasses, or a combination of both. Bluebunch wheatgrass ( <i>Pseudoroegneria spicata</i> ) is often the prevailing cover component along with Idaho fescue ( <i>Festuca idahoensis</i> ), Sandberg bluegrass ( <i>Poa secunda</i> ), rough fescue ( <i>F. campestris</i> ), or needlegrasses ( <i>Achnatherum</i> spp.).
_	Juniper Savannah: All juniper woodlands.
	e: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed where.

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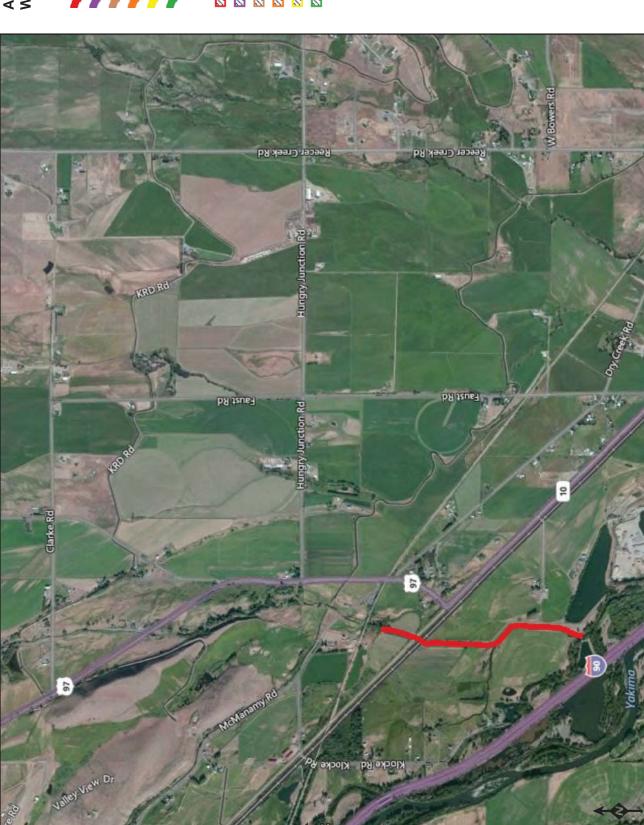
Appendix B







# FW03 - Figure 4



# Assessed Waters/Sediment

Water

Category 5 - 303d Category 4C Category 4B

Category 4A

Category 2

Category 1

Sediment

ZZZ Category 5 - 303d

ZZZ Category 4C ZZZ Category 4B

ZZZ Category 4A

ZZZ Category 2

ZZZ Category 1

0.5 Miles 0 0.25



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Water Quality & Supply

Waste & Toxics

Air & Climate

Cleanup & Spills



# Water Quality Improvement Projects (TMDLs)

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 39: Upper Yakima

### WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

Overview of the process

Project Catalog

by WRIA by County

Funding Opportunities
Project Development

Related Information

Priority Lists

TMDL Contacts

# RELATED ECOLOGY PROGRAMS

Water Quality

### WRIA 39: Upper Yakima

The following table lists overview information and links to specific water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

### Yakima River basin project index:

www.ecy.wa.gov/programs/wq/tmdl/yakima\_wq/index.html Counties

- Kittitas
- Yakima



Project Name	Pollutants	Status**	TMDL Lead
<u>Crystal Creek</u>	Ammonia-N BOD (5-day) Chlorine Fecal Coliform	EPA approved	Jane Creech 509-454-7860
<u>Selah Ditch</u>	Fecal Coliform Temperature	EPA approved	Greg Bohn 509-454-4174
Teanaway River segments:  Upper West Fork Teanaway River Upper Middle Fork Teanaway River Upper North Fork Teanaway River Stafford Creek Lower West Fork Teanaway River Lower Middle Fork Teanaway River Lower Middle Fork Teanaway River Lower North Fork Teanaway River Mainstem Teanaway River	Temperature	EPA approved	Jane Creech 509-454-7860
Wilson/Cooke Creek Tributaries:  Badger Creek Bull Ditch Caribou Creek Cherry Creek CID Canal Coleman Creek Cook Creek EWC Canal Johnson Drain	Fecal Coliform	EPA approved Has an implementation plan Post-TMDL monitoring report	Jane Creech 509-454-7860 Greg Bohn 509-454-4174

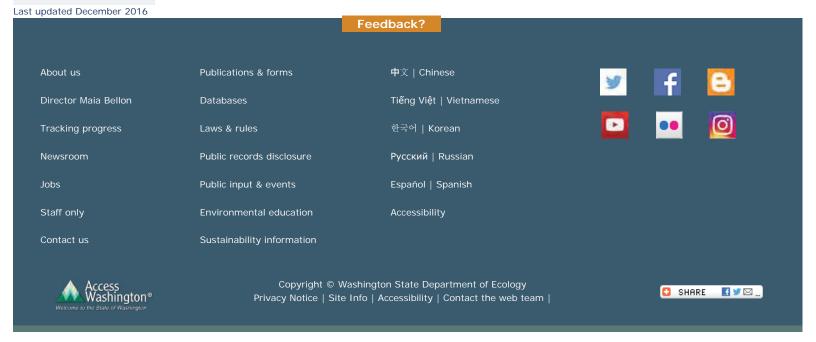
Mercer Creek  Naneum Creek Parke Creek Whiskey Creek Wilson Creek Wipple Wasteway			
Yakima River, Upper	Dieldrin DDT Suspended Sediments Turbidity	EPA approved	Jane Creech 509-454-7860
	Temperature	EPA approved Has an implementation plan	<u>Jane Creech</u> 509-454-7860
Yakima River	Toxics	Under development	<u>Jane Creech</u> 509-454-7860

<sup>\*\*</sup> Status will be listed as one of the following: Approved by EPA, Under Development or Implementation. No status means project work has not yet started.

#### For more information about WRIA 39:

- Waterbodies in WRIA 39 using the Water Quality Assessment Query Tool
- Watershed Information for WRIA 39
- \* The Department of Ecology and other state resource agencies frequently use a system of 62 "Water Resource Inventory Areas" or "WRIAs" to refer to the state's major watershed basins.

Back to top of page



# **RATING SUMMARY – Eastern Washington**

Name of wetland (or ID #): Fwo Y	Date of site visit:
Rated by N. Evan Dulth	Trained by Ecology? Yes No Date of training 3/24/17
HGM Class used for rating Rivering	Wetland has multiple HGM classes?YN
NOTE: Form is not complete without Source of base aerial photo/map _	the figures requested (figures can be combined).  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
 _Category IV — Total score = 9-15

FUNCTION	THE RESERVE OF THE PARTY OF THE	iprov ter Qu	ing uality	Ну	drol	ogic		Habit	at	
			Circle	the ap	prop	riate r	atings	5		
Site Potential	Н	M	L	H	М	L	Н	М	(L)	1
Landscape Potential	Н	M	L	Н	М	(L)	Н	М	(1)	
Value	(H)	M	L	H)	М	L	Н	M	L	TOTAL
Score Based on Ratings		7			7	-		4		18

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

9 = H,H,H 8 = H,H,M 7 = H,H,L 7 = H,M,M

6 = H,M,L 6 = M,M,M 5 = H,L,L

5 = M,M,L 4 = M,L,L 3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY Circle the appropriate category
Vernal Pools	II III
Alkali	I
Wetland of High Conservation Value	ı
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 **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 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)	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	1
Hydroperiods	H 1.2, H 1.3	1
Ponded depressions	R 1.1	1
Boundary of area within 150 ft of the wetland (can be added to another figure)	R 2.4	1
Map of the contributing basin	R 2.2, R 2.3, R 5.2	NIAT
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	1 1
Width of wetland vs. width of stream (can be added to another figure)	R 4.1	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	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	9
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	R 3.2, R 3.3	3

\* KRD canal is unnaturally fed by irrigation, spanning several Lake Fringe Wetlands

Screen capture of map of 303(d) listed waters in basin (from Ecology website)

Screen capture of list of TMDLs for WRIA in which wetland is found (website)

arange pasins in the Wilson/Cooke Creek system.		
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	H 2.1, H 2.2, H 2.3	
polygons for accessible habitat and undisturbed habitat		

L 3.1, L 3.2

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.		the water side of the Ordinary High Water Mark of a body plants on the surface) that is at least 20 ac (8 ha) in size
	NO – go to 2	YES - The wetland class is Lake Fringe (Lacustrine Fringe)
2.		very gradual), n one direction (unidirectional) and usually comes from flow, or in a swale without distinct banks;
(	-	YES – The wetland class is <b>Slope</b> ese type of wetlands except occasionally in very small and (depressions are usually <3 ft diameter and less than 1 foot
3.		iel, where it gets inundated by overbank flooding from that
	NO - go to 4 <b>NOTE:</b> The Riverine wetland can contain of flooding.	YES – The wetland class is <b>Riverine</b> depressions that are filled with water when the river is not
4.	Is the entire wetland unit in a topographic	depression in which water ponds, or is saturated to the

NO – go to 5

YES – The wetland class is **Depressional** 

surface, at some time during the year. This means that any outlet, if present, is higher than the interior

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.

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of the wetland.

**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 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.

RIVERINE WETLANDS  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  Depressions cover > 1/10 area of wetland  Depressions present but cover < 1/10 area of wetland  No depressions present  Points = 3  Points = 3  Points = 3	6
R 1.2. Structure of plants in the wetland (areas with >90% cover at person height; <b>not</b> Cowardin classes):  Forest or shrub > $^2/_3$ the area of the wetland  Forest or shrub $^1/_3 - ^2/_3$ area of the wetland  Ungrazed, herbaceous plants > $^2/_3$ area of wetland  Ungrazed herbaceous plants $^1/_3 - ^2/_3$ area of wetland  Forest, shrub, and ungrazed herbaceous < $^1/_3$ area of wetland  points = $^1/_3$ area of wetland	5
Total for R 1 Add the points in the boxes above	e

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?	t 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 qu R 2.1-R 2.4? Source	restions Yes = 1 (No = 0)	0
Total for R 2 Add the point	ts in the boxes above	2

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 t mi?	ributary that drains to one within 1  Yes = 1 (No = 0)	0
R 3.2. Does the river or stream have TMDL limits for nutrients, toxics, or path		1
R 3.3. Has the site been identified in a watershed or local plan as important for YES if there is a TMDL for the drainage in which wetland is found.	or maintaining water quality? Answer (Yes = 2) No = 0	2
Total for R 3	Add the points in the boxes above	3

Rating of Value If score is: 2-4 = H \_\_\_1 = M \_\_\_0 = L

Record the rating on the first page

RIVERINE WETLANDS  Hydrologic Functions - Indicators that site functions to reduce flooding and stream er	rosion	Points (only 1 score per box)
R 4.0. Does the site have the potential to reduce flooding and erosion?		
If the ratio is 1-2 If the ratio is $\frac{27}{25}$ If the ratio is $\frac{2}{25}$		8
Forest or shrub for $>^1/_3$ area OR emergent plants $>^2/_3$ area Forest or shrub for $>^1/_{10}$ area OR emergent plants $>^1/_3$ area		4
Total for R 5  Add the points in the bo  ating of Site Potential If score is: 12-16 = H 6-11 = M 0-5 = L  Record	xes above the rating on I	the first pag
ating of Site Potential If score is:12-16 = H6-11 = M0-5 = L	SWING/AND DESCRIPTION	
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?	the rating on I	the first pag
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?  R 5.2. Does the up-gradient watershed include a UGA or incorporated area?  Yes =	the rating on to	0
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?  R 5.2. Does the up-gradient watershed include a UGA or incorporated area?  Yes =	the rating on (a) 0 No = 1 (a) No = 0 (b) No = 1	0
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?  R 5.2. Does the up-gradient watershed include a UGA or incorporated area?  Yes = R 5.3. Is the up-gradient stream or river controlled by dams?  Yes = Total for R 5  Add the points in the bo	the rating on (a) 0 No = 1 (a) No = 0 (b) No = 1	0
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?  R 5.2. Does the up-gradient watershed include a UGA or incorporated area?  R 5.3. Is the up-gradient stream or river controlled by dams?  Yes =  Total for R 5  Add the points in the bo	the rating on a 0 No = 1 (No = 0) No = 1 oxes above	0
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?  R 5.2. Does the up-gradient watershed include a UGA or incorporated area?  R 5.3. Is the up-gradient stream or river controlled by dams?  Total for R 5  Add the points in the boating of Landscape Potential If score is:3 = H1 or 2 = M0 = L  Record	the rating on to the rating on to the rating on to that best fits	0 0
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?  R 5.2. Does the up-gradient watershed include a UGA or incorporated area?  Yes =  R 5.3. Is the up-gradient stream or river controlled by dams?  Yes =  Total for R 5  Add the points in the boating of Landscape Potential  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 to the site.  The sub-basin immediately down-gradient of site has surface flooding problems that result in da human or natural resources  Surface flooding problems are in a basin farther down-gradient  No flooding problems anywhere downstream  R 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood	the rating on a  O No = 1  O No = 1  O No = 1  O No = 1  Exess above  the rating on a  that best fits  mage to points = 2 points = 1 points = 0	0

These questions apply to wetlands of all HGM classes.  HABITAT FUNCTIONS - Indicators that site functions to provide important habitat	(only 1 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)  Forested (areas where trees have >30% cover)  2	8
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.  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 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. Richness of plant species  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.  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.  None = 0 points  Low = 1 point  Moderate = 2 points	Figure_
All three diagrams in this row are  High = 3 points  Riparian braided channels with 2 classes	

retiand hame of number	
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)	
Total for H 1 Add the points in the boxes above	6
Rating of Site Potential If score is:15-18 = H7-14 = 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 + [(% moderate and low intensity land uses)/2] = %	
> 1/3 (33.3%) of 1 km Polygon 41.613 points = 3	
20-33% of 1km Polygon  10-19% of 1km Polygon  25  830 ac 1% 76  830 ac 1	
10-19% of 1km Polygon points = 1	
_<10% of 1km Polygon points = 0	ļ
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 Walls - Mid points = 3	
Undisturbed habitat 10 - 50% and in 1-3 patches $\frac{11}{370} = \frac{1}{3} = \frac{1}{16} = \frac{1}{2} = $	1
Undisturbed habitat 10 - 50% and in 1-3 patches  Undisturbed habitat 10 - 50% and > 3 patches  Undisturbed habitat 10 - 50% and > 3 patches $ \frac{167}{370} = \frac{167}{370} = \frac{167}{370} = \frac{167}{370} $ points = 2 points = 1	
70 / 1	
H 2.3. Land use intensity in 1 km Polygon:  > 50% of Polygon is high intensity land use	$\sim$
, , , ,	- 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 2 Add the points in the boxes above	- 1.
Rating of Landscape Potential 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	. 1
— It is a Wetland of High Conservation Value as determined by the Department of Natural Resources	1
— It has been categorized as an important habitat site in a local or regional comprehensive plan, in a	
Shoreline Master Plan, or in a watershed plan Site has 1 or 3 priority habitats within 100 m (see Appendix B)	,
Site has 1 or 2 priority habitats within 100 m (see Appendix B)  Site does not meet any of the criteria above  points = 1  points = 0	
Rating of Value If score is: 2 = H 1 = M 0 = L Record the rating on the first page	

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

# Appendix B: WDFW Priority Habitats in Eastern Washington

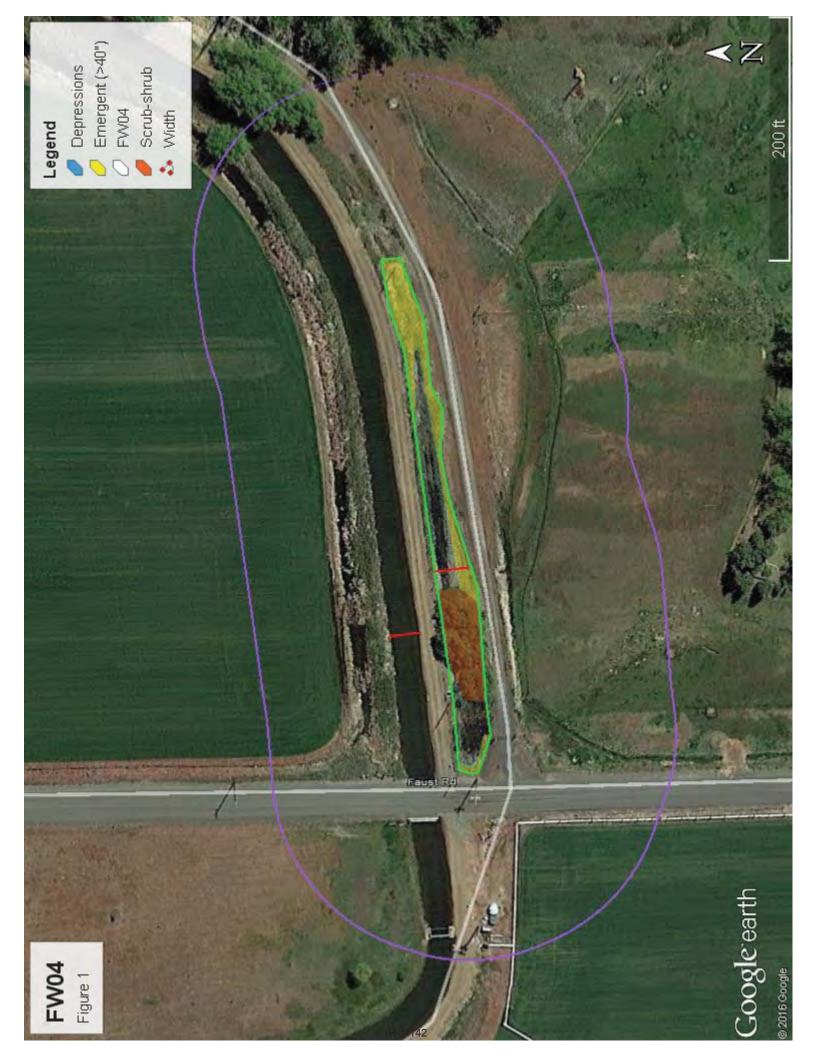
Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. <a href="http://wdfw.wa.gov/publications/00165/wdfw00165.pdf">http://wdfw.wa.gov/publications/00165/wdfw00165.pdf</a> or access the list from here: <a href="http://wdfw.wa.gov/conservation/phs/list/">http://wdfw.wa.gov/conservation/phs/list/</a>)

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: Old-growth east of Cascade crest = Stands are highly variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. In general, stands will be >150 years of age, with 10 trees/ac (25 trees/ha) that are > 21 in (53 cm) dbh, and 1-3 snags/ac (2.5-7.5 snags/ha) that are > 12-14 in (30-35 cm) diameter. Downed logs may vary from abundant to absent. Canopies may be single or multi-layered. Evidence of human-caused alterations to the stand will be absent or so slight as to not affect the ecosystem's essential structures and functions. Mature forests = Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west and 80-160 years old east of the Cascade crest.
- Oregon White Oak: Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak
  component is important (full descriptions in WDFW PHS report p. 158 see web link above).
- Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial
  ecosystems which mutually influence each other.
  - Instream: The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
  - Caves: A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or
    other geological formations and is large enough to contain a human.
  - Cliffs: Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
  - Talus: Homogenous areas of rock rubble ranging in average size 0.5 6.5 ft (0.15 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
  - Snags and Logs: Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 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





# FW04 - Figure 4

# E 28th Reecer Creek Rd Reecer Creek Rd KRD Rd Faust Rd

# Waters/Sediment Assessed

Water

Category 5 - 303d Category 4C Category 4B

Category 4A Category 2

Category 1

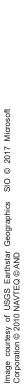
ZZZ Category 5 - 303d Sediment

ZZZ Category 4C ZZZ Category 4B

ZZZ Category 4A

ZZZ Category 2

ZZZ Category 1









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Water Quality & Supply

Waste & Toxics

Air & Climate

Cleanup & Spills



# Water Quality Improvement Projects (TMDLs)

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 39: Upper Yakima

#### WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

Overview of the process

Project Catalog

by WRIA by County

Funding Opportunities
Project Development

Priority Lists

Related Information

TMDL Contacts

# RELATED ECOLOGY PROGRAMS

Water Quality

#### WRIA 39: Upper Yakima

The following table lists overview information and links to specific water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

#### Yakima River basin project index:

www.ecy.wa.gov/programs/wq/tmdl/yakima\_wq/index.html Counties

- Kittitas
- Yakima



Project Name	Pollutants	Status**	TMDL Lead
<u>Crystal Creek</u>	Ammonia-N BOD (5-day) Chlorine Fecal Coliform	EPA approved	<u>Jane Creech</u> 509-454-7860
<u>Selah Ditch</u>	Fecal Coliform Temperature	EPA approved	<u>Greg Bohn</u> 509-454-4174
Teanaway River segments:  Upper West Fork Teanaway River Upper Middle Fork Teanaway River Upper North Fork Teanaway River Stafford Creek Lower West Fork Teanaway River Lower Middle Fork Teanaway River Lower North Fork Teanaway River Mainstem Teanaway River	Temperature	EPA approved	Jane Creech 509-454-7860
Wilson/Cooke Creek Tributaries:  Badger Creek Bull Ditch Caribou Creek Cherry Creek CID Canal Coleman Creek Cook Creek EWC Canal Johnson Drain KRD Canal	Fecal Coliform	EPA approved Has an implementation plan Post-TMDL monitoring report	Jane Creech 509-454-7860 Greg Bohn 509-454-4174

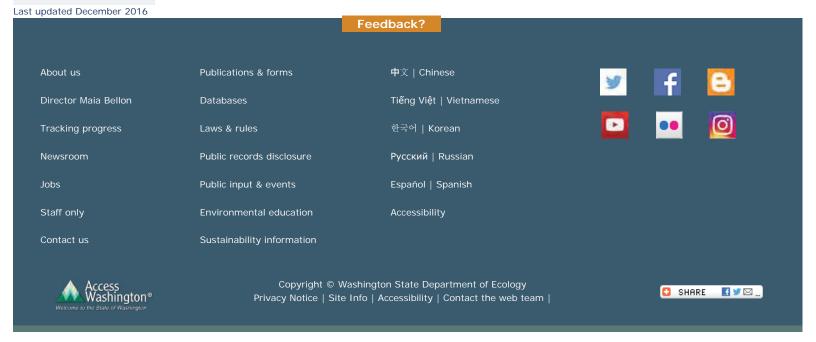
Mercer Creek  Naneum Creek Parke Creek Whiskey Creek Wilson Creek Wipple Wasteway			
Yakima River, Upper	Dieldrin DDT Suspended Sediments Turbidity	EPA approved	Jane Creech 509-454-7860
	Temperature	EPA approved Has an implementation plan	<u>Jane Creech</u> 509-454-7860
Yakima River	Toxics	Under development	<u>Jane Creech</u> 509-454-7860

<sup>\*\*</sup> Status will be listed as one of the following: Approved by EPA, Under Development or Implementation. No status means project work has not yet started.

#### For more information about WRIA 39:

- Waterbodies in WRIA 39 using the Water Quality Assessment Query Tool
- Watershed Information for WRIA 39
- \* The Department of Ecology and other state resource agencies frequently use a system of 62 "Water Resource Inventory Areas" or "WRIAS" to refer to the state's major watershed basins.

Back to top of page



**RATING SUMMARY – Eastern Washington** 

Name of wetland (or ID#): FW05 Rated by N. Evan Dulin	Date of site visit: _	4/11/17
Rated by N. Evan Dulin	Trained by Ecology?Yes No Date o	of training 3/24/17
HGM Class used for rating Rivenine	Wetland has multiple HGM classes?	Y
NOTE: Form is not complete without Source of base aerial photo/map	t the figures requested (figures can be combined to	ined). —
OVERALL WETLAND CATEGORY	(based on functions or special cha	racteristics)
1. Category of wetland based o	n FUNCTIONS	
Category I – Total scoreCategory II – Total scoreCategory III – Total score	re = 19-21 ore = 16-18	Score for each function based on three ratings (order of ratings is not important)

FUNCTION	A SERVICE AND A SERVICE	nprov ter Q	ing uality	\$75 Pelikolehiri 1.75	drolo	gic		Habit	at	
	-		Circle	the a	propi	riate r	atings	;		
Site Potential	Н	М	(Î)	(H)	М	L	Н	M	<u>(l)</u>	1
Landscape Potential	Н	(M)	L	Н	(M)	L	Н	М	(1)	
Value	Н	M	(L)	Н	M	L	Н	M	L	TOTAL
Score Based on Ratings		Ĺ	1		7			4		15

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

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

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 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 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)	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	1
Hydroperiods	H 1.2, H 1.3	17
Ponded depressions	R 1.1	1
Boundary of area within 150 ft of the wetland (can be added to another figure)	R 2.4	1
Map of the contributing basin	R 2.2, R 2.3, R 5.2	2
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	1
Width of wetland vs. width of stream (can be added to another figure)	R 4.1	1
1 km Polygon: Area that extends 1 km from entire wetland edge - including	H 2.1, H 2.2, H 2.3	7
polygons for accessible habitat and undisturbed habitat		
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	4
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	R 3.2, R 3.3	5

# 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.

	相关的 10 元 10
1.	Does the entire unit <b>meet both</b> 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 <b>meet all</b> of the following criteria? The wetland is on a slope (slope can be very gradual), The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks; The water leaves the wetland without being impounded.
	NO - go to 3  YES - The wetland class is <b>Slope</b> 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 food deep).
3.	Does the entire wetland unit <b>meet all</b> 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  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. <i>This means that any outlet, if present, is higher than the interior</i>

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 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.

RIVERINE WETLANDS  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  Depressions cover $> 1/10$ area of wetland  Depressions present but cover $< 1/10$ area of wetland  Points = 1  No depressions present  Points = 0	0
R 1.2. Structure of plants in the wetland (areas with >90% cover at person height; <b>not</b> Cowardin classes):  Forest or shrub > $^2/_3$ the area of the wetland  Forest or shrub $^1/_3 - ^2/_3$ area of the wetland  Ungrazed, herbaceous plants > $^2/_3$ area of wetland  Ungrazed herbaceous plants $^1/_3 - ^2/_3$ area of wetland  Forest, shrub, and ungrazed herbaceous < $^1/_3$ area of wetland  points = 0	5
Total for R 1 Add the points in the boxes above	5

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 fore within the last 5 years?	ests that 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 pollutar	nts (Yes = 1) No = 0	1
R 2.5. Are there other sources of pollutants coming into the wetland that are not liste R 2.1-R 2.4? Source	ed in questions Yes = 1 (No = 0	0
Total for R 2 Add th	ne points in the boxes above	2

R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tribu	cary that drains to one within 1	
mi? Euc Canal within I mile is not on 303(d) list	Yes = 1 (No = 0 )	0
R 3.2. Does the river or stream have TMDL limits for nutrients, toxics, or pathoger	yes = 1 (No = 0)	0
R 3.3. Has the site been identified in a watershed or local plan as important for m YES if there is a TMDL for the drainage in which wetland is found.	aintaining water quality? Answer Yes = 2 (No = 0)	0
Total for R 3 Ad	dd 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 first page

RIVERINE WETLANDS		Points (only 1 score
Hydrologic Functions - Indicators that site functions to reduce floor	ding and stream erosion	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 stream or river channel (distance between banks). Calculate the ratio: (average width of stream between banks).  If the ratio is more than 2  If the ratio is 1-2  If the ratio is ½-<1  If the ratio is ½-<½		10
If the ratio is < 1/4	points = 1	
R 4.2. Characteristics of plants that slow down water velocities during floods: Trea shrub. Choose the points appropriate for the best description (polygons nee height. These are NOT Cowardin classes).  Forest or shrub for more than $^2/_3$ the area of the wetland  Forest or shrub for $>^1/_3$ area OR emergent plants $>^2/_3$ area  Forest or shrub for $>^1/_{10}$ area OR emergent plants $>^1/_3$ area  Plants do not meet above criteria		4
Total for R 5 Ad	d the points in the boxes above	14
THE PERSON NAMED OF THE PE	COURT OF THE PROPERTY AND ADDRESS OF THE PARTY OF THE PAR	i lugilis
THE PERSON AND ADDRESS OF THE PERSON AND ADD	ctions of the site?  Yes = 0 (No = 1)	1
R 5.1. Is the stream or river adjacent to the wetland downcut?	COURT OF THE PROPERTY AND ADDRESS OF THE PARTY OF THE PAR	0
R 5.1. Is the stream or river adjacent to the wetland downcut? R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 0 (No = 1)	
R 5.1. Is the stream or river adjacent to the wetland downcut?  R 5.2. Does the up-gradient watershed include a UGA or incorporated area?  R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 (No = 1) $Yes = 1 (No = 0)$	0
R 5.1. Is the stream or river adjacent to the wetland downcut?  R 5.2. Does the up-gradient watershed include a UGA or incorporated area?  R 5.3. Is the up-gradient stream or river controlled by dams?  Total for R 5	Yes = 0 (No = 1)  Yes = 1 (No = 0)  Yes = 0 (No = 1)	0 1 2
PROPERTY AND	Yes = $0 (No = 1)$ Yes = $1 (No = 0)$ Yes = $0 (No = 1)$ d the points in the boxes above  Record the rating on	0 1 2
R 5.1. Is the stream or river adjacent to the wetland downcut?  R 5.2. Does the up-gradient watershed include a UGA or incorporated area?  R 5.3. Is the up-gradient stream or river controlled by dams?  Total for R 5  Adding of Landscape Potential If score is: 3 = H 1 or 2 = M 0 = L  R 6.0. Are the hydrologic functions provided by the site valuable to society	Yes = $0 (No = 1)$ Yes = $1 (No = 0)$ Yes = $0 (No = 1)$ d the points in the boxes above  Record the rating on  ?  oose the description that best fits	0 1 2
R 5.1. Is the stream or river adjacent to the wetland downcut?  R 5.2. Does the up-gradient watershed include a UGA or incorporated area?  R 5.3. Is the up-gradient stream or river controlled by dams?  Total for R 5  Additing of Landscape Potential If score is:3 = H1 or 2 = M0 = L  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? Charles the site.  The sub-basin immediately down-gradient of site has surface flooding probleman or natural resources  Surface flooding problems are in a basin farther down-gradient	Yes = 0 (No = 1)  Yes = 1 (No = 0)  Yes = 0 (No = 1)  In the points in the boxes above  Record the rating on  Property of the description that best fits  Items that result in damage to points = 2 points = 1 points = 0	0 1 2

These questions apply to wetlands of all HGM classes.  HABITAT FUNCTIONS - Indicators that site functions to provide important habitat	(only 1 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 >= ½ 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)  Forested (areas where trees have >30% cover)  3 checks: points = 2  2 checks: points = 0	1
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.  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 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. Richness of plant species  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.  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.  None = 0 points  Low = 1 point  Moderate = 2 points  All three diagrams in this row are High = 3 points	Figure
Riparian braided channels with 2 classes	

CHAIR Haine of Humber	
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)	7
Total for H 1 Add the points in the boxes above	
Rating of Site Potential If score is:15-18 = H7-14 = M0-6 = L Record the rating on the first page	
THE SECOND SECTION OF THE SECOND	
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	
$> \frac{1}{3}$ (33.3%) of 1 km Polygon points = 3	
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 $\frac{7}{7}$ + [(% moderate and low intensity land uses)/2] $\frac{9}{9}$ = $\frac{16}{9}$ %	
Undisturbed habitat > 50% of Polygon undis	
Undisturbed habitat 10 - 50% and in 1-3 patches	1
Undisturbed habitat 10 - 50% and > 3 patches 67 10% points = 1	1. 1
Undisturbed habitat 10 - 50% and > 3 patches  Undisturbed habitat < 10% of Polygon	
H 2.3. Land use intensity in 1 km Polygon:	
> 50% of Polygon is high intensity land use 75% points = (-2)	-7
	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	0
reclamation areas, irrigation districts, or reservoirs  Yes = 3 (No = 0)	7
Total for H 2 Add the points in the boxes above	1
Rating of Landscape Potential If score is:4-9 = H1-3 = M<1 = L Record the rating on the first page	
	NAMES AND ADDRESS OF
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	
<ul> <li>— It has 3 or more priority habitats within 100 m (see Appendix B)</li> </ul>	
<ul> <li>It provides habitat for Threatened or Endangered species (any plant or animal on state or federal lists)</li> </ul>	
It is mapped as a location for an individual WDFW species	1
<ul> <li>It is a Wetland of High Conservation Value as determined by the Department of Natural Resources</li> </ul>	4
<ul> <li>It has been categorized as an important habitat site in a local or regional comprehensive plan, in a</li> </ul>	
Shoreline Master Plan, or in a watershed plan	
Site has 1 or 2 priority habitats within 100 m (see Appendix B) points = 1	
Site does not meet any of the criteria above points = 0	
Rating of Value If score is:2 = H1 = M0 = L Record the rating on the first page	1
Rating of Value in Score is 2 - if 2 - if 0 - E Accord the fating of the just page	

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# Appendix B: WDFW Priority Habitats in Eastern Washington

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. <a href="http://wdfw.wa.gov/publications/00165/wdfw00165.pdf">http://wdfw.wa.gov/publications/00165/wdfw00165.pdf</a> or access the list from here: <a href="http://wdfw.wa.gov/conservation/phs/list/">http://wdfw.wa.gov/conservation/phs/list/</a>)

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.

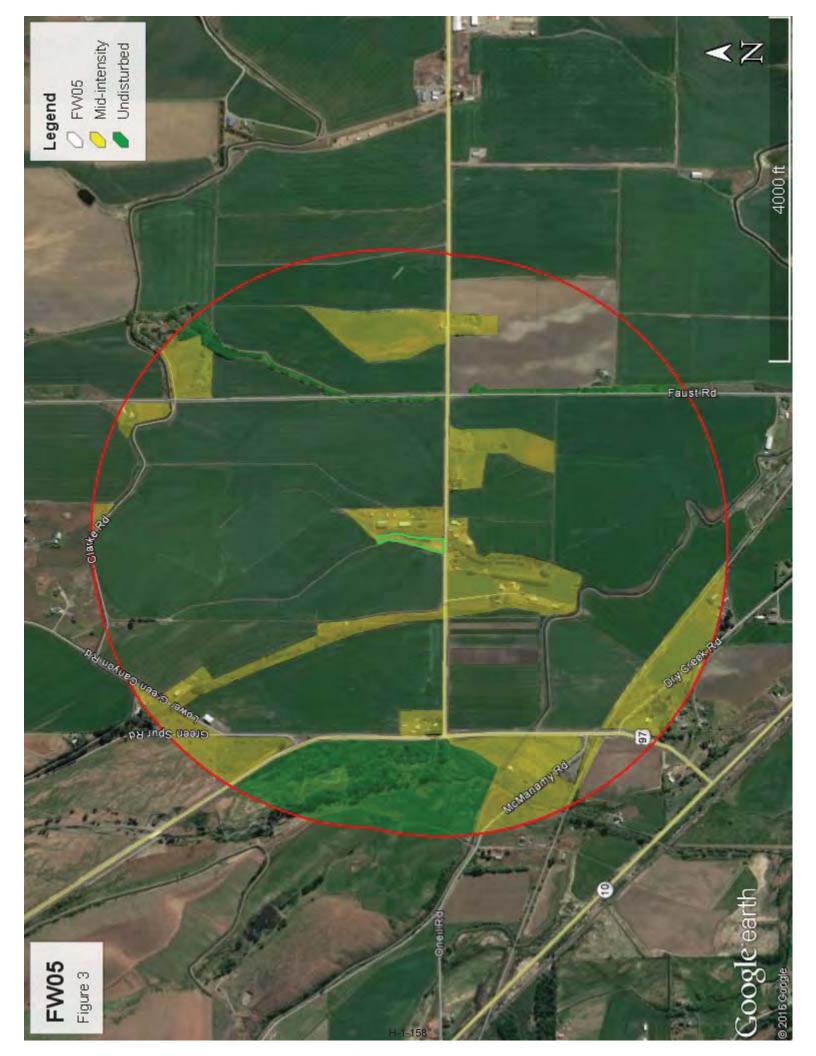
- Aspen Stands: Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- Biodiversity Areas and Corridors: Areas of habitat that are relatively important to various species of native fish and wildlife (full descriptions in WDFW PHS report).
- Old-growth/Mature forests: Old-growth east of Cascade crest = Stands are highly variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. In general, stands will be >150 years of age, with 10 trees/ac (25 trees/ha) that are > 21 in (53 cm) dbh, and 1-3 snags/ac (2.5-7.5 snags/ha) that are > 12-14 in (30-35 cm) diameter. Downed logs may vary from abundant to absent. Canopies may be single or multi-layered. Evidence of human-caused alterations to the stand will be absent or so slight as to not affect the ecosystem's essential structures and functions. Mature forests = Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west and 80-160 years old east of the Cascade crest.
- Oregon White Oak: Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak
  component is important (full descriptions in WDFW PHS report p. 158 see web link above).
- Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
  - Instream: The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
  - Caves: A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or
    other geological formations and is large enough to contain a human.
  - Cliffs: Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
  - Talus: Homogenous areas of rock rubble ranging in average size 0.5 6.5 ft (0.15 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
  - Snags and Logs: Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 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.

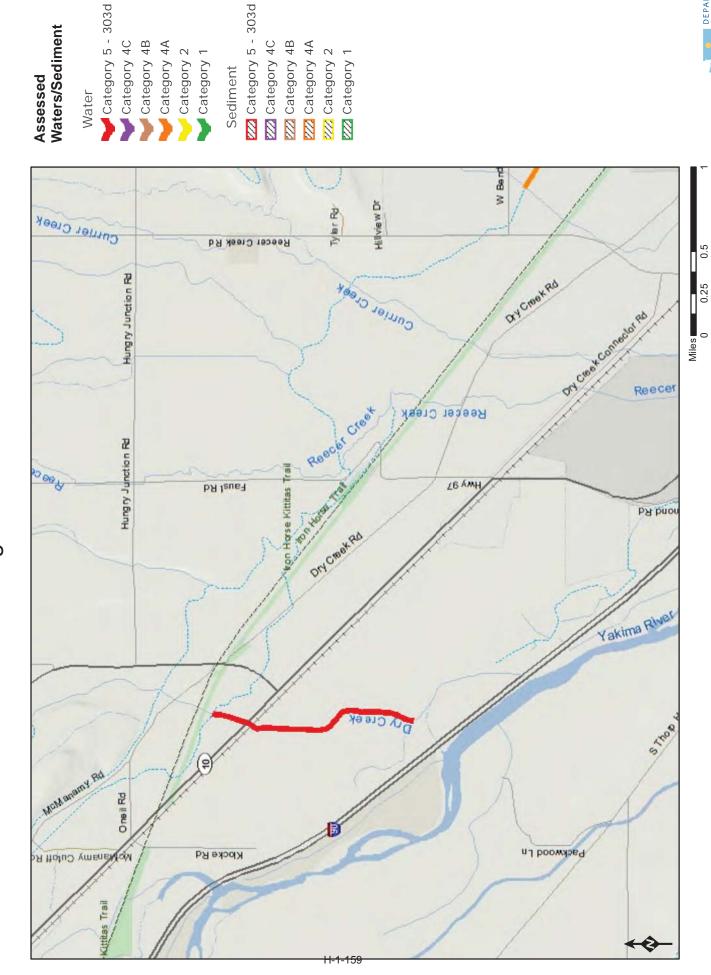
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FW05 - Figure 4







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Water Quality & Supply

Waste & Toxics

Air & Climate

Cleanup & Spills



# Water Quality Improvement Projects (TMDLs)

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 39: Upper Yakima

#### WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

Overview of the process

Project Catalog

by WRIA by County

Funding Opportunities
Project Development

Priority Lists

Related Information

TMDL Contacts

# RELATED ECOLOGY PROGRAMS

Water Quality

### WRIA 39: Upper Yakima

The following table lists overview information and links to specific water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

## Yakima River basin project index:

www.ecy.wa.gov/programs/wq/tmdl/yakima\_wq/index.html Counties

- Kittitas
- Yakima



Project Name	Pollutants	Status**	TMDL Lead
<u>Crystal Creek</u>	Ammonia-N BOD (5-day) Chlorine Fecal Coliform	EPA approved	Jane Creech 509-454-7860
<u>Selah Ditch</u>	Fecal Coliform Temperature	EPA approved	Greg Bohn 509-454-4174
Teanaway River segments:  Upper West Fork Teanaway River Upper Middle Fork Teanaway River Upper North Fork Teanaway River Stafford Creek Lower West Fork Teanaway River Lower Middle Fork Teanaway River Lower Middle Fork Teanaway River Lower North Fork Teanaway River Mainstem Teanaway River	Temperature	EPA approved	Jane Creech 509-454-7860
Wilson/Cooke Creek Tributaries:  Badger Creek Bull Ditch Caribou Creek Cherry Creek CID Canal Coleman Creek Cook Creek EWC Canal Johnson Drain	Fecal Coliform	EPA approved Has an implementation plan Post-TMDL monitoring report	Jane Creech 509-454-7860 Greg Bohn 509-454-4174

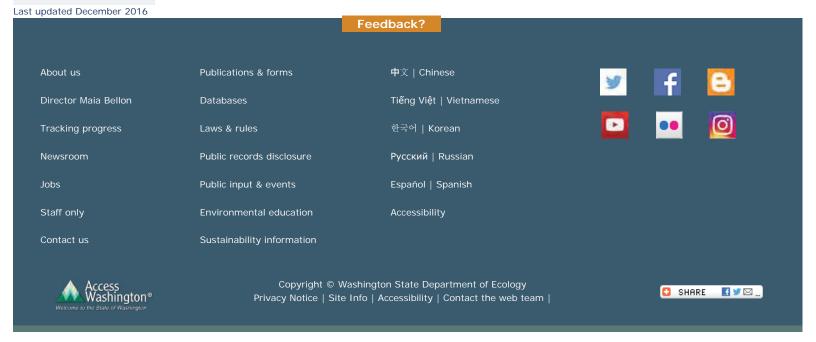
Mercer Creek  Naneum Creek Parke Creek Whiskey Creek Wilson Creek Wipple Wasteway			
Yakima River, Upper	Dieldrin DDT Suspended Sediments Turbidity	EPA approved	Jane Creech 509-454-7860
	Temperature	EPA approved Has an implementation plan	<u>Jane Creech</u> 509-454-7860
Yakima River	Toxics	Under development	<u>Jane Creech</u> 509-454-7860

<sup>\*\*</sup> Status will be listed as one of the following: Approved by EPA, Under Development or Implementation. No status means project work has not yet started.

#### For more information about WRIA 39:

- Waterbodies in WRIA 39 using the Water Quality Assessment Query Tool
- Watershed Information for WRIA 39
- \* The Department of Ecology and other state resource agencies frequently use a system of 62 "Water Resource Inventory Areas" or "WRIAs" to refer to the state's major watershed basins.

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# **RATING SUMMARY – Eastern Washington**

Name of wetland (or ID #): F w o も	Date of site visit: 4/11/17
Rated by N. Evan Dulin	Trained by Ecology? Yes No Date of training 3/24/17
HGM Class used for rating Depressiona	Wetland has multiple HGM classes?YN
NOTE: Form is not complete without Source of base aerial photo/map _	the figures requested (figures can be combined).
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
Category IV – Total score = 9-15

FUNCTION		nprov ter Q	ing uality	Ну	drol	ogic		Habit	at	-
			Circle	the a	oprop	riate r	atings	ì		]
Site Potential	Н	(M)	L	Н	M	(r)	Н	M	(L)	1
Landscape Potential	Н	(M)	L	Н	(M)	L	Н	М	Û	1
Value	H	М	L	H <sub>,</sub> .	М	(L)	Н	М	(L)	TOTAL
Score Based on Ratings		7			C			3		14

Score for each function based on three ratings (order of ratings is not important) 9 = H,H,H 8 = H,H,M 7 = H,H,L

6 = H,M,L 6 = M,M,M 5 = H,L,L

7 = H,M,M

5 = H,L,L5 = M,M,L

4 = M,L,L3 = L,L,L

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 Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	D 1.3, H 1.1, H 1.5	1
Hydroperiods (including area of open water for H 1.3)	D 1.4, H 1.2, H 1.3	1
Location of outlet (can be added to map of hydroperiods)	D 1.1, D 4.1	1
Boundary of area within 150 ft of the wetland (can be added to another figure)	D 2.2, D 5.2	1
Map of the contributing basin	D 5.3	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	3
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	4
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	D 3.3	5

# Riverine Wetlands

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

# Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	L 1.1, L 4.1, H 1.1, H 1.5	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland (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 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.

	questions 1-4 apply, and go to Question 5.
1.	Does the entire unit <b>meet both</b> 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 sizeAt least 30% of the open water area is deeper than 10 ft (3 m)
	NO – go to 2 YES – The wetland class is Lake Fringe (Lacustrine Fringe)
2.	Does the entire wetland unit <b>meet all</b> 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 <b>without being impounded</b> .
	NO - go to 3  YES - The wetland class is <b>Slope</b> 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 <b>meet all</b> 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 <b>Riverine NOTE:</b> 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. <i>This means that any outlet, if present, is higher than the interior of the wetland.</i>

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.

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NO - go to 5

YES - The wetland class is Depressional

**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 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.

Water Quality Functions - Indicators that the site functions to improve water quality	Points (only 1 score per box)
D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland:  Wetland has no surface water outlet points = 5  Wetland has an intermittently flowing outlet points = 3  Wetland has a highly constricted permanently flowing outlet points = 3  Wetland has a permanently flowing, unconstricted, surface outlet points = 1	3
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions of soils)  YES = 3 NO = 0	0
D 1.3. Characteristics of persistent vegetation (Emergent, Scrub-shrub, and/or Forested Cowardin classes)  Wetland has persistent, ungrazed, vegetation for $> ^2/_3$ of area  Wetland has persistent, ungrazed, vegetation from $^1/_3$ to $^2/_3$ of area  Wetland has persistent, ungrazed vegetation from $^1/_{10}$ to $< ^1/_3$ of area  Wetland has persistent, ungrazed vegetation $< ^1/_{10}$ of area  points = 1  Wetland has persistent, ungrazed vegetation $< ^1/_{10}$ of area  points = 0	5
D 1.4. Characteristics of seasonal ponding or inundation:  This is the area of ponding that fluctuates every year. Do not count the area that is permanently ponded.  Area seasonally ponded is > ½ total area of wetland  Area seasonally ponded is ¼ - ½ total area of wetland  Area seasonally ponded is < ¼ total area of wetland  Area seasonally ponded is < ¼ total area of wetland  Points = 0	0
Total for D 1 Add the points in the boxes above	8
	OF ALL ME
D 2.0, Does the landscape have the potential to support the water quality function of the site?	
D 2.0. Does the landscape have the potential to support the water quality function of the site?  D 2.1. Does the wetland receive stormwater discharges?  Yes = $1 \left[ \text{No} = 0 \right]$	0
	0 1
D 2.1. Does the wetland receive stormwater discharges? Yes = $1 \cdot \text{No} = 0$ D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = $1 \cdot \text{No} = 0$	0 1 0
D 2.1. Does the wetland receive stormwater discharges? Yes = $1 \cdot \text{No} = 0$ D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = $1 \cdot \text{No} = 0$ D 2.3. Are there septic systems within 250 ft of the wetland? Yes = $1 \cdot \text{No} = 0$ D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions	0 1 0 0 1
D 2.1. Does the wetland receive stormwater discharges?  D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?  D 2.3. Are there septic systems within 250 ft of the wetland?  D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions  D 2.1-D 2.3? Source  Yes = 1 (No = 0)  Total for D 2  Add the points in the boxes above	1
D 2.1. Does the wetland receive stormwater discharges?  D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?  D 2.3. Are there septic systems within 250 ft of the wetland?  D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions  D 2.1-D 2.3? Source  Yes = 1 (No = 0)  Total for D 2  Add the points in the boxes above	1
D 2.1. Does the wetland receive stormwater discharges?  D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?  D 2.3. Are there septic systems within 250 ft of the wetland?  D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions  D 2.1-D 2.3? Source  Yes = 1 (No = 0)  Total for D 2  Add the points in the boxes above  Rating of Landscape Potential If score is:3 or 4 = H1 or 2 = M0 = L  Record the rating on the	1
D 2.1. Does the wetland receive stormwater discharges?  D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?  D 2.3. Are there septic systems within 250 ft of the wetland?  D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions  D 2.1-D 2.3? Source  Yes = 1 (No = 0)  Total for D 2  Add the points in the boxes above  Rating of Landscape Potential If score is:3 or 4 = H1 or 2 = M0 = L  D 3.0. Is the water quality improvement provided by the site valuable to society?  D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, or lake that is on the 303(d) list?	1 ne first pa
D 2.1. Does the wetland receive stormwater discharges?  D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?  D 2.3. Are there septic systems within 250 ft of the wetland?  D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions  D 2.1- D 2.3? Source  Yes = 1 (No = 0)  Total for D 2  Rating of Landscape Potential  If score is:3 or 4 = H1 or 2 = M0 = L  D 3.0. Is the water quality improvement provided by the site valuable to society?  D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, or lake that is on the 303(d) list?  Or Creek in < 0.27 in the control of the wetland in a basin or sub-basin where water quality is an issue in some aquatic resource [303(d) list,	1 ne first pa

DEPRESSIONAL WETLANDS		Points
Hydrologic Functions - Indicators that the site functions to reduce flooding and	d erosion.	(only 1 score per box)
D 4.0. Does the site have the potential to reduce flooding and erosion?		
D 4.1. Characteristics of surface water outflows from the wetland:		
Wetland has no surface water outlet	points = 8	100
<ul> <li>Wetland has an intermittently flowing outlet</li> </ul>	points = 4	4
Wetland has a highly constricted permanently flowing outlet	points = 4	
Wetland has a permanently flowing unconstricted surface outlet (If outlet is a ditch and not permanently flowing treat wetland as "intermittently flowing		
D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of wetlands with no outlet, measure from the surface of permanent water or deepest part (Seasonal ponding: > 3 ft above the lowest point in wetland or the surface of permanent Seasonal ponding: 2 ft - < 3 ft above the lowest point in wetland or the surface of perma The wetland is a headwater wetland Seasonal ponding: 1 ft - < 2 ft Seasonal ponding: 6 in - < 1 ft Seasonal ponding: < 6 in or wetland has only saturated soils	(if dry).  ponding points = 8  anent pondingpoints = 6  points = 4  points = 2  points = 0	0
Total for D 4 Add the poi	ints in the boxes above	
Rating of Site Potential If score is: 12-16 = H 6-11 = M 0-5 = L	Record the rating on	the first pag
D 5.0. Does the landscape have the potential to support the hydrologic functions of th		
D 5.1. Does the wetland receive stormwater discharges?	Yes = 1 (No = 0	0
D 5.2. Is $>$ 10% of the area within 150 ft of the wetland in a land use that generates runoff?	(Yes = 1) No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human	n land uses? $(Yes = 1) No = 0$	1
Total for D 5 Add the po	ints in the boxes above	2
D 6.0. Are the hydrologic functions provided by the site valuable to society?	Record the rating on	the first pag
D 6.1. The wetland is in a landscape that has flooding problems.  Choose the description that best matches conditions around the wetland being rated. D Choose the highest score if more than one condition is met.  The wetland captures surface water that would otherwise flow down-gradient into area damaged human or natural resources (e.g., houses or salmon redds), AND		
Flooding occurs in sub-basin that is immediately down-gradient of wetland Surface flooding problems are in a sub-basin farther down-gradient	points = 2	-
		U
The existing or potential outflow from the wetland is so constrained by human or natural water stored by the wetland cannot reach areas that flood.  Explain why Water Source is from controlled it rightion	al conditions that the points = 0	
There are no problems with flooding downstream of the wetland	points = 0	
D 6.2. Has the site has been identified as important for flood storage or flood conveyance in a plan?	regional flood control Yes = 2 (No = 0	0
	ints in the boxes above	
ating of Value If score is: 2-4 = H 1 = M $\sqrt{0}$ = L	Record the rating on	

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

retland name or numbert	
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	2
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 1 Add the points in the boxes above	2
Rating of Site Potential If score is:15-18 = H7-14 = M0-6 = 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 $\frac{1}{16}$ + [(% moderate and low intensity land uses)/2] $\frac{1}{16}$ = $\frac{12}{12}$ %	
> 1/3 (33.3%) of 1 km Polygon und points = 3	1
20-33% of 1km Polygon $ \begin{array}{ccccccccccccccccccccccccccccccccccc$	1
10-19% of 1km Polygon 740 ac 760 ac 2% points = 1  <10% of 1km Polygon points = 0	
H 2.2. Undisturbed habitat in 1 km Polygon around wetland.	
Calculate: % undisturbed habitat $\frac{14}{9}$ + [(% moderate and low intensity land uses)/2] $\frac{15.5}{9}$ = $\frac{29.5}{9}$ %	
Undisturbed habitat > 50% of Polygon undit Mid points = 3	
Contraction of the Contraction o	1
-Undisturbed habitat 10 - 50% and > 3 patches  Undisturbed habitat < 10% of Polygon  Undisturbed habitat < 10% of Polygon  Undisturbed habitat < 10% of Polygon  The points = 1  The points = 1	- Alleran
Undisturbed habitat 10 - 50% and in 1-3 patches  Undisturbed habitat 10 - 50% and > 3 patches  Undisturbed habitat < 10% of Polygon  Undisturbed habitat < 10% of Polygon  Undisturbed habitat < 10% of Polygon	
H 2.3. Land use intensity in 1 km Polygon:	
> 50% of Polygon is high intensity land use $55\%$ 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. <i>Generally, this means outside boundaries of</i>	0
reclamation areas, irrigation districts, or reservoirs  Yes = 3 (No = 0)	_
Total for H 2 . Add the points in the boxes above	()
Rating of Landscape Potential If score is: 4-9 = H 1-3 = M <pre></pre>	
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	
<ul> <li>It has 3 or more priority habitats within 100 m (see Appendix B)</li> <li>It provides habitat for Threatened or Endangered species (any plant or animal on state or federal lists)</li> </ul>	
— It is mapped as a location for an individual WDFW species	0
— It is mapped as a location for an individual work 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	
Site has 1 or 2 priority habitats within 100 m (see Appendix B) points = 1	,
Site does not meet any of the criteria above points = 0	
Rating of Value If score is: 2 = H 1 = M 0 = L Record the rating on the first page	

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# 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. <a href="http://wdfw.wa.gov/publications/00165/wdfw00165.pdf">http://wdfw.wa.gov/publications/00165/wdfw00165.pdf</a> or access the list from here: <a href="http://wdfw.wa.gov/conservation/phs/list/">http://wdfw.wa.gov/conservation/phs/list/</a>)

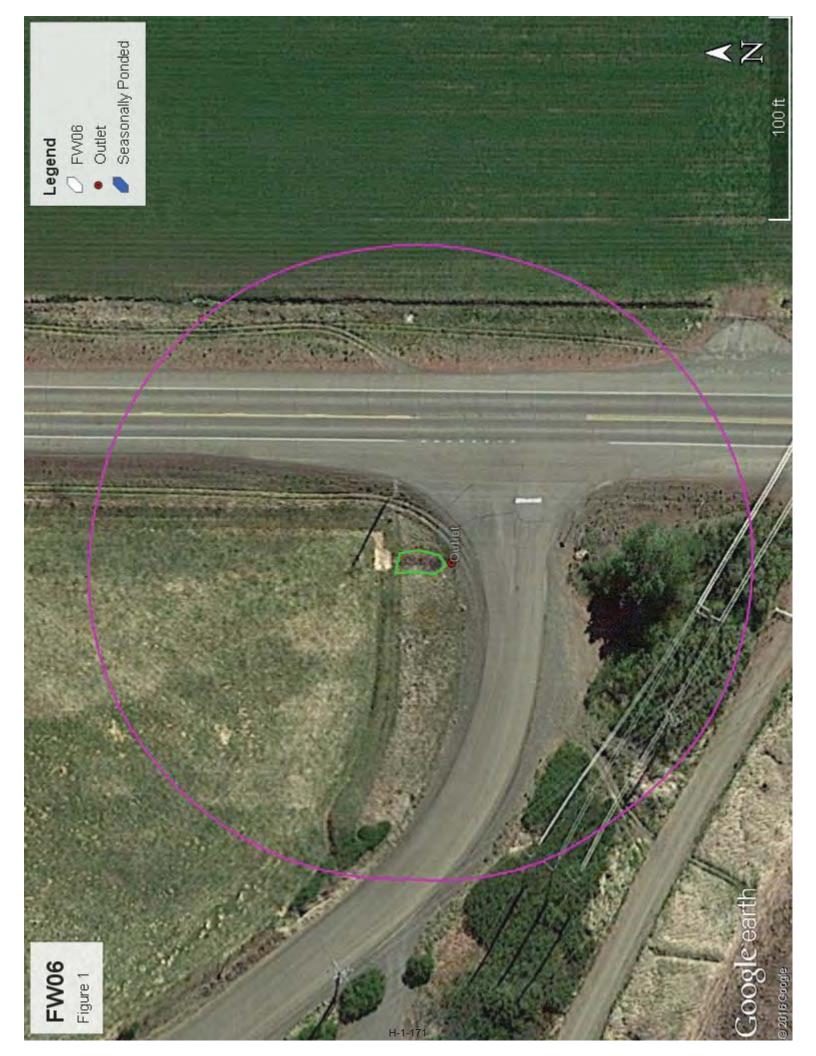
Count how many of the following priority habitats are within 330 ft (100 m) of the wetland: **NOTE:** This question is independent of the land use between the wetland and the priority habitat.

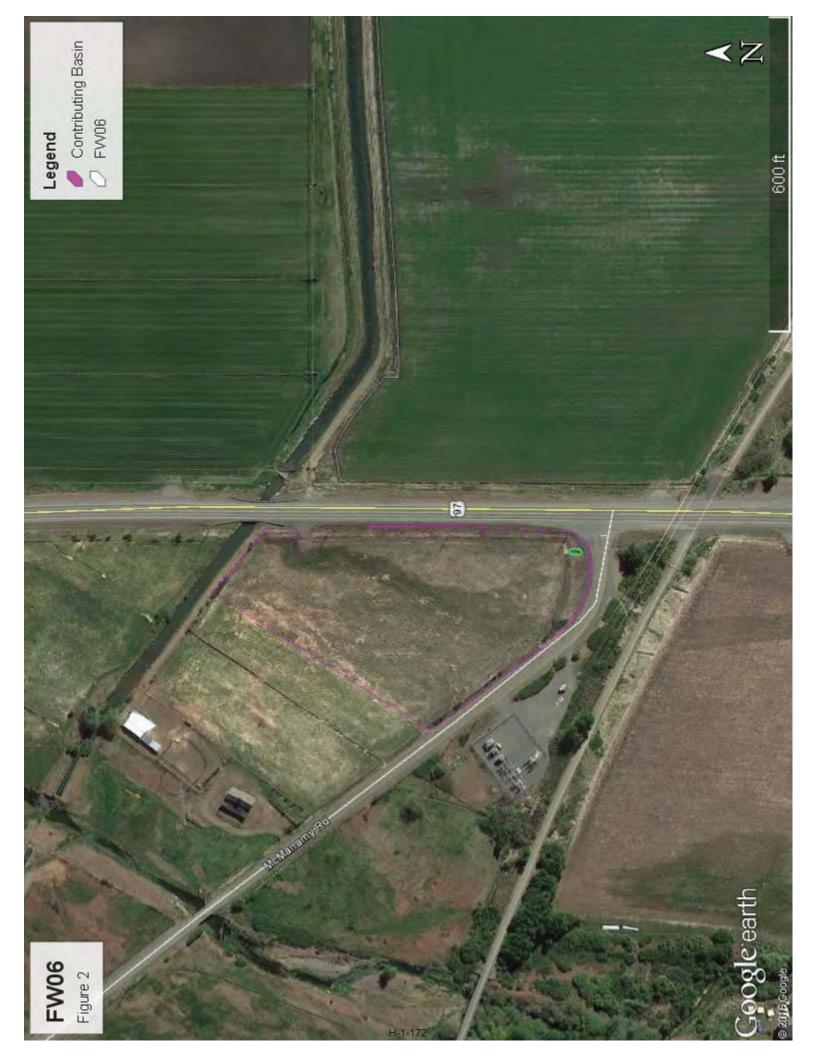
— Aspen Stands: Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

- 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: Old-growth east of Cascade crest Stands are highly variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. In general, stands will be >150 years of age, with 10 trees/ac (25 trees/ha) that are > 21 in (53 cm) dbh, and 1-3 snags/ac (2.5-7.5 snags/ha) that are > 12-14 in (30-35 cm) diameter. Downed logs may vary from abundant to absent. Canopies may be single or multi-layered. Evidence of human-caused alterations to the stand will be absent or so slight as to not affect the ecosystem's essential structures and functions. Mature forests Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west and 80-160 years old east of the Cascade crest.
- Oregon White Oak: Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak
  component is important (full descriptions in WDFW PHS report p. 158 see web link above).
- Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial
  ecosystems which mutually influence each other.
- Instream: The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- Caves: A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or
  other geological formations and is large enough to contain a human.
- Cliffs: Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- Talus: Homogenous areas of rock rubble ranging in average size 0.5 6.5 ft (0.15 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- Snags and Logs: Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 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







# **FW06 - Figure 4**



# Assessed Waters/Sediment

Water

Category 5 - 303d
Category 4C
Category 4B

Category 4A Category 2

Category 1

category

Sediment

zzz Category 5 - 303d

Category 4CZZ Category 4B

ZZZ Category 4A

222 Category 2

zzz Category 1

Miles 0.125 0.25

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Home

Water Quality & Supply

Waste & Toxics

Air & Climate

Cleanup & Spills

# Water Quality Improvement Projects (TMDLs)

WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

Overview of the process

Project Catalog

by WRIA by County

Funding Opportunities
Project Development

Priority Lists
Related Information

TMDL Contacts

RELATED ECOLOGY PROGRAMS

Water Quality

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 39: Upper Yakima

## WRIA 39: Upper Yakima

The following table lists overview information and links to specific water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

#### Yakima River basin project index:

www.ecy.wa.gov/programs/wq/tmdl/yakima\_wq/index.html Counties

- Kittitas
- Yakima



Project Name	Pollutants	Status**	TMDL Lead
<u>Crystal Creek</u>	Ammonia-N BOD (5-day) Chlorine Fecal Coliform	EPA approved	Jane Creech 509-454-7860
Selah Ditch	Fecal Coliform Temperature	EPA approved	Greg Bohn 509-454-4174
Teanaway River segments:  Upper West Fork Teanaway River Upper Middle Fork Teanaway River Upper North Fork Teanaway River Stafford Creek Lower West Fork Teanaway River Lower Middle Fork Teanaway River Lower North Fork Teanaway River Mainstem Teanaway River	Temperature	EPA approved	Jane Creech 509-454-7860
Wilson/Cooke Creek Tributaries:  Badger Creek Bull Ditch Caribou Creek Cherry Creek CID Canal Coleman Creek Cook Creek EWC Canal Johnson Drain	Fecal Coliform	EPA approved Has an implementation plan Post-TMDL monitoring report	Jane Creech 509-454-7860 Greg Bohn 509-454-4174

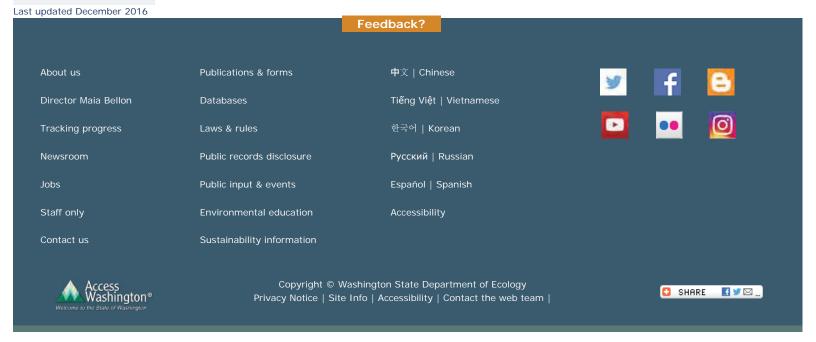
Mercer Creek  Naneum Creek Parke Creek Whiskey Creek Wilson Creek Wipple Wasteway			
Yakima River, Upper	Dieldrin DDT Suspended Sediments Turbidity	EPA approved	Jane Creech 509-454-7860
	Temperature	EPA approved Has an implementation plan	<u>Jane Creech</u> 509-454-7860
Yakima River	Toxics	Under development	<u>Jane Creech</u> 509-454-7860

<sup>\*\*</sup> Status will be listed as one of the following: Approved by EPA, Under Development or Implementation. No status means project work has not yet started.

#### For more information about WRIA 39:

- Waterbodies in WRIA 39 using the Water Quality Assessment Query Tool
- Watershed Information for WRIA 39
- \* The Department of Ecology and other state resource agencies frequently use a system of 62 "Water Resource Inventory Areas" or "WRIAS" to refer to the state's major watershed basins.

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APPENDIX F: KITTITAS COUNTY WETLAND BUFFER GUIDANCE

# Chapter 17A.04

# CRITICAL AREAS DESIGNATION AND DEVELOPMENT STANDARDS

#### **Sections**

17A.04.010 Wetlands.

17A.04.015 No net loss of wetland areas.

17A.04.020 Buffer width requirements.

17A.04.025 Wetland buffer ranges.

17A.04.030 Wetland buffer averaging.

17A.04.035 Natural condition of wetland buffer.

17A.04.040 Allowed uses.

<u>17A.04.045</u> Building setback lines from wetland buffers.

17A.04.050 Wetland replacement ratios.

# 17A.04.010 Wetlands.

Wetlands in Kittitas County are defined in <u>Section 17A.02.310</u> and classified in four categories: Category I (extreme high value), Category II (high value), Category III (average value), Category IV (less than average value). Critical area wetlands in Kittitas County are defined as Category I, Category II, Category III and Category IV wetlands as determined by the planning manager.

Category IV wetlands may be determined by the director to constitute a critical area based upon application of the criteria in this chapter. (Ord. 95-15 (part), 1995; Ord. 94-22 (part), 1994).

# 17A.04.015 No net loss of wetland areas.

Kittitas County shall require, to the extent practical, and except for Category IV wetlands, a zero net loss of natural wetlands functions and values together with, if reasonably possible through voluntary agreements or government incentives, a gain of wetlands in the long term. (Ord. 94-22 (part), 1994).

# 17A.04.020 Buffer width requirements.

Wetland buffer requirements apply to all nonexempt activities on regulated wetlands. All wetland buffers shall be measured from the wetland boundary.

# **Category Size of Wetland**

## **Required Buffer**

I	any size	50 - 200 feet
II	over 2,000 sq. ft.	
III	over 10,000 sq. ft.	20 - 80 feet
IV*	43,560 sq. ft. (1 acre)	Building setbacks will be determined by the zoning lot line setbacks, but shall not exceed 25 feet.

<sup>\*</sup>Includes only nonirrigation induced or enhanced Category IV wetlands. Irrigation water does influence ground water table elevations in Kittitas County.

(Ord. 96-14 (part), 1996; Ord. 95-15 (part), 1995; Ord. 94-22 (part), 1994).

# 17A.04.025 Wetland buffer ranges.

The wetland buffer ranges have been established to reflect the impact of certain intense land uses on wetland function and values. The director shall base the buffer size on the following criteria and shall establish the least restrictive width of buffer necessary to account for all of the following considerations:

- 1. The overall intensity of the proposed use;
- 2. The presence of threatened, endangered, or sensitive species;
- 3. The site's susceptibility to severe erosion;
- 4. The use of a buffer enhancement plan by the applicant which uses native vegetation or other measures which will enhance the functions and values of the wetland or buffer. (Ord. 94-22 (part), 1994).

# 17A.04.030 Wetland buffer averaging.

Wetland buffers may be modified by averaging buffer widths. Wetland buffer width averaging shall be allowed only where the applicant demonstrates that the following exists:

- 1. That averaging is necessary to avoid an extraordinary hardship to the applicant caused by circumstances peculiar to the property;
- 2. That the wetland contains variations in sensitivity due to existing physical characteristics;
- 3. That the proposed use would be located adjacent to areas where buffer width is reduced, and that such land uses are low in impact;
- 4. That width averaging will not adversely impact wetland function and values. (Ord. 9422 (part), 1994).

## 17A.04.035 Natural condition of wetland buffer.

Natural condition of wetland buffer. Wetland buffer areas shall be retained in their natural condition or may be improved to enhance buffer functions and values. Where buffer disturbance has occurred during construction, revegetation with native vegetation may be required. The Kittitas County noxious weed ordinance shall be adhered to. (Ord. 94-22 (part), 1994).

#### 17A.04.040 Allowed uses.

In addition to exempt activities otherwise identified herein, the following activities are allowed to occur on wetland and wetland buffer areas: nonmotorized outdoor recreational activities including hunting and fishing; educational activities; existing and ongoing agricultural activities, silviculture and mining; and maintenance of existing facilities, structures, ditches, roads, bridges and other utility systems. Up to two acres of Class IV wetlands may be filled, drained or modified with no approval required from the planning manager. If more than two acres of Class IV wetlands are filled, drained or modified, approval of the planning manager is required. Such development activity shall provide mitigation in accordance with <a href="Section 17A.04.050">Section 17A.04.050</a> for that portion of the wetland fill or modification that exceeds two acres. Category IV wetlands may be used for secondary stormwater management facilities having no reasonable alternative on-site location, provided there is no significant adverse impact to the functions and values of those wetlands. (Ord. 95-15 (part), 1995; Ord. 94-22 (part), 1994).

17A.04.045 Building setback lines from wetland buffers.

A building setback line equal to the side yard setback requirement of the applicable zoning district is required from the edge of any wetland buffer. Minor intrusions into the area of the building setback may be allowed if the director determines that such intrusions will not negatively impact the wetland. The setbacks shall be shown on all site plans submitted with the application. (Ord. 94-22 (part), 1994).

# 17A.04.050 Wetland replacement ratios.

Wetland replacement ratios are expressed in gross area required for replacement. The actual replacement, enhancement or rehabilitation of wetlands shall be determined by the director and meet all applicable standards for such. Replacement areas shall be determined according to function, acreage, type, location, time factors, ability to be self sustaining and projected success. Wetland functions and values shall be calculated using the Kittitas County critical areas policy document and the professional judgment of the director.

# Category of Wetland Replacement Ratio

I	3:1
II	2:1
III	1.5:1

IV 1:1 for the portion of a wetland fill or modification

(Ord. 96-14 (part), 1996; Ord. 95-15 (part), 1995; Ord. 94-22 (part), 1994).