CHIWAWA LOOP ROAD:
PHASE III ROADWAY RECONSTRUCTION
WETLAND DELINEATION

CHELAN COUNTY PUBLIC WORKS
CHELAN COUNTY, WA

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1 INTRODUCTION

Chelan County Public Works Department (CCPW) is in the planning phases of a project known as the Phase III roadway reconstruction of Chiwawa Loop Road. This project is focused on improving the Chiwawa Loop Road, which serves as a primary road for the Plain, Fish Lake and Lake Wenatchee communities. This project will be a full depth reconstruction of the existing roadway to remedy a deteriorating subgrade and roadway base as well as prevent a large increase in life cycle costs.

The CCPW Environmental Affairs Coordinator, Jason Detamore, investigated the entire project area to determine which areas required further investigation and delineation. CCPW then contracted with Grette Associates^{LLC} to conduct the further investigation and delineation necessary to determine the presence and extent of wetlands within the right of way and to perform wetland delineations of any identified wetland areas. Only the portions of the wetlands within the boundaries of the project area, e.g. right of way, were assessed. Grette Associates staff performed wetland data collection and boundary delineation on July 25, 2014.

The investigation resulted in the identification of two wetland areas within the Phase III roadway reconstruction area. One wetland is located where Clear Creek crosses Chiwawa Loop Road. This wetland area is identified in this document as Wetland A within the Clear Creek study area. The other wetland area is located at the intersection of Chiwawa Loop Road and Wending Lane. This wetland area is identified in this document as Wetland B within the Wending Lane study area.

Both study areas are located in rural Chelan County in Section 32, Township 27N, Range 18E, W.M. The Clear Creek study area is located in the right of way to the east of Chelan County tax parcel number 271831140200, at approximately latitude 47.799397, longitude -120.631747. The adjacent property does not have an assigned street address number identified within the Chelan County GIS data mapping system but is in the vicinity of the 11000 to 20000 blocks of Chiwawa Loop Road.

The Wending Lane Study Area is located in the right of way to the west of Chelan County tax parcel number 271831140100, at approximately latitude 47.796448, longitude -120.628965. Similar to the Clear Creek study area, the adjacent property does not have and assigned street address number identified within the Chelan County GIS data mapping system but is in the vicinity of 20771 Chiwawa Loop Road and is north of Wending Lane.

Data sheets are attached for reference in Appendix A.

2 WETLAND SUMMARY

After investigation of the entire right of way associated with the Phase III roadway reconstruction area, two wetlands were identified during field delineation efforts. The general features of these wetlands are summarized in Table 1.

Table 1: Wetland Summary

Wetland	Study Area	Cowardin Classification	Preliminary Rating	Regulated by Chelan County?
A	Clear Creek	Riverine, Intermittent, Emergent/Forested (R4EM/FO)	II	Yes
B	Wending	Palustrine, Forested, Seasonally Flooded/Saturated (PFOE)	IV	Yes

3 METHODS

The entire right of way area associated with Phase III roadway reconstruction of Chiwawa Loop Road was traversed on foot and wetland areas were identified for further study. As noted in the introduction, two wetland areas, Wetland A (Clear Creek Study Area) and Wetland B (Wending Lane Study Area) were identified. Further study of these wetland areas was conducted by excavating representative sampling points/soil text pits to evaluate wetland conditions. Sampling points were established in and adjacent to wetlands within the study areas.

Wetland boundaries were identified based on changes in vegetation, water levels at or above 12 inches below the soil surface, topographic changes, and best professional judgment.

3.1 WETLAND DELINEATION

Guidance from the 1987 Army Corps of Engineers *Wetlands Delineation Manual ("1987 Manual")* (U.S. Army Corps of Engineers (USACE), 1987), as well as the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) ("Western Mountain Supplement")* (U.S. Army Corps of Engineers, 2010) was used to perform the wetland delineation. The methods in these manuals recognize that the three parameters of hydrology, hydric soils, and hydrophytic vegetation are generally found in wetlands and that these parameters are important in the establishment and maintenance of wetland communities. The methods evaluate each of the three parameters to determine if a wetland is present and to establish wetland boundaries.

The presence of dominant hydrophytic vegetation as well as indicators of wetland hydrology are used to delineate the boundary between wetland and upland areas. Wetland boundaries are then confirmed by checking the soil color and organic content to verify presence of hydric soils. Wetlands are classified using the U.S. Fish and Wildlife

Service's (USFWS) *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin, Carter, Golet, & LaRoe, 1979) and are categorized using Ecology's *Washington State Wetlands Rating System for Eastern Washington - Revised* (Hruby, 2006).

To mark/delineate the boundary between wetlands and uplands, surveyor's flagging was tied to vegetation to identify the wetland boundary. The location of the four data points were also marked with a contrasting color of surveyor's flagging.

3.1.1 Hydrophytic Vegetation

USFWS has established a rating system that has been applied to commonly occurring plant species on the basis of their frequency of occurrence in wetlands (Table 1). Species indicator status expresses the range in which plants may occur in wetlands and non-wetlands (uplands). Under this system, vegetation is considered hydrophytic when there is an indicator status of facultative (FAC), facultative wetland (FACW) or obligate wetland (OBL) (Table 1). The USACE's *Western Mountains, Valleys, and Coast 2014 Regional Wetland Plant List* (Lichvar 2014) was used to determine vegetation indicator status.

Under the Western Mountains Supplement, the hydrophytic vegetation criterion for a wetland determination is determined primarily by three tests, in order of priority: the rapid test, the dominance test, and the prevalence index. The dominance test is met when more than 50 percent of the dominant species in the plant community are FAC or wetter. The prevalence index begins with assessing and summing the total cover of all plants within the wetland. Next, the total cover within each indicator status (e.g. total cover of all OBL species, all FACW species, etc.) is summed, then multiplied by a multiplier (1 for OBL, 2 for FACW, 3 for FAC, 4 for FACU, and 5 for UPL species). Then the products of all indicator status categories are summed, and this sum is then divided by the summed total coverage. If the result is above 3, the vegetative community is upland. If the result is below 3, the vegetative community is hydrophytic. Additionally, the observation of morphological plant adaptations and the presence of wetland non-vascular plants can be used as hydrophytic vegetation indicators.

Table 2: Definitions for USFWS plant indicator status

Plant Indicator Status Category	Indicator Status Abbreviation	Definition (Estimated Probability of Occurrence)
Obligate Upland	UPL	Occur rarely (<1 percent) in wetlands, and almost always (>99 percent) in uplands
Facultative Upland	FACU	Occur sometimes (1 percent to <33 percent) in wetlands, but occur more often (>67 percent to 99 percent) in uplands
Facultative	FAC	Similar likelihood (33 percent to 67 percent) of occurring in both wetlands and uplands
Facultative Wetland	FACW	Occur usually in wetlands (>67 percent to 99 percent), but also occur in uplands (1 percent to 33 percent)
Obligate Wetland	OBL	Occur almost always (>99 percent) in wetlands, but rarely occur in uplands (<1 percent)
Not Listed	NL	Not listed are classified as UPL

Plants were determined to be more or less associated with wetlands based on their wetland indicator status. The percent dominance for each plant strata was determined using the "50-20 Rule".

3.1.2 Wetland Hydrology

Evidence of permanent or periodic inundation or soil saturation to the surface for 12.5% of the growing season (soil temperatures above 41°F at 19.7 inches below the surface) meets the hydrology criterion. The Western Mountains Supplement includes several indicators of wetland hydrology, divided into four categories: Category A (observation of surface water or saturated soils), Category B (evidence of recent inundation), Category C (evidence of current or recent soil saturation), and Category D (evidence form other site conditions or data). Category A includes direct observations of hydrology, and Categories B-D include indirect observations. Within each category, indicators are further divided into "primary" and "secondary" indicators. One primary indicator is required to confirm the presence of wetland hydrology, while at least two secondary indicators are required. According to the Western Mountains Supplement, all indicators are "intended as one-time observations that are sufficient evidence of wetland hydrology in areas where hydric soils and hydrophytic vegetation are present" (U.S. Army Corps of Engineers, 2010, p. 69).

In the Northwest Forests and Coast Region (LRR-A), nineteen primary indicators have been established, including surface water, high water table, soil saturation, surface soil cracks, inundation visible on aerial imagery, water-stained leaves, salt crust, hydrogen sulfide odor, and oxidized rhizospheres along live roots in the top 12 inches. Eight secondary indicators have been established, including drainage patterns, dry-season water table, saturation visible on aerial imagery, and a positive FAC-neutral test.

3.1.3 Hydric Soils

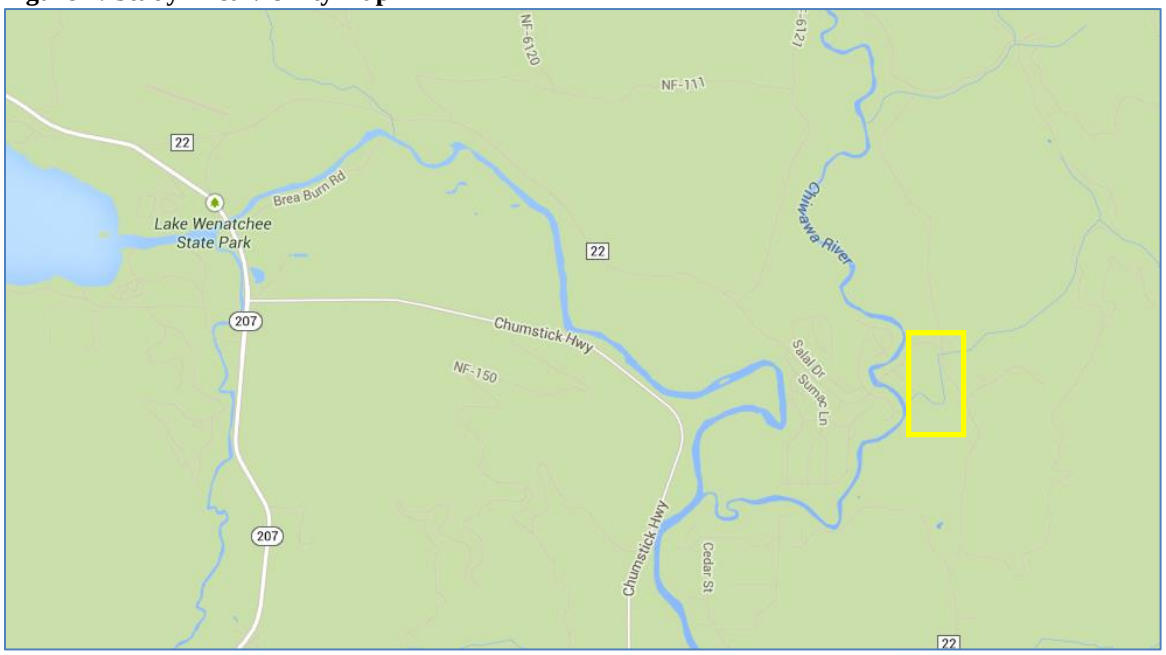
Soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper soil horizons are considered hydric soils. Hydric soil indicators are formed predominantly by the accumulation or loss of iron, manganese, sulfur, or carbon compounds in a saturated or anaerobic environment. The Western Mountains Supplement includes six hydric soils indicators that apply to all soil types, including histosols, histic epipedon layer, black histic layer, a sulfidic odor, depleted soil matrix below dark surface, and thick dark surface. Additional indicators also apply based on the soil type (U.S. Army Corps of Engineers, 2010).

4 BACKGROUND INFORMATION

4.2 SITE LOCATION

The study area is located in rural Chelan County. To drive to the site take State Highway 2 and turn north on State Highway 207 then torn right on onto Chiwawa Loop Road. The study area are located is approximately 4.8 miles from the State Highway 207 Chiwawa Loop Road intersection.

Figure 1: Study Area vicinity map

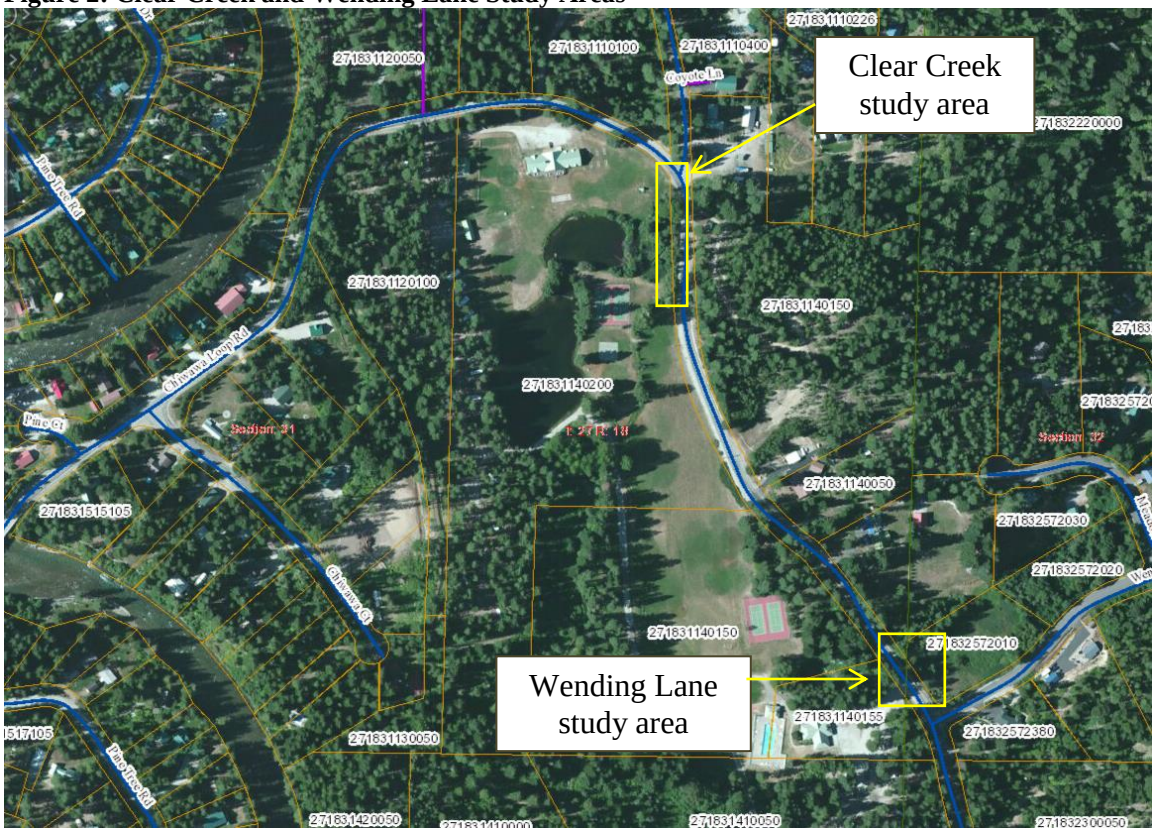


Generalized location of study areas within the overall landscape represented by the yellow polygon.

4.1 STUDY AREA CHARACTERISTICS

The Phase III roadway reconstruction is associated with a portion of Chiwawa Loop Road. The topography in the study area is relatively flat and at a general elevation of 2000 ft. Dominant habitats in the vicinity of the study areas include forested areas and open maintained meadow areas. Land use in the adjacent areas includes recreational areas and residences. Refer to Figure 2 below.

Figure 2: Clear Creek and Wending Lane Study Areas



Note: Both study areas are limited to the right of way associated with Chiwawa Loop Road.

Plant species identified within the study areas are listed in Table 3 below.

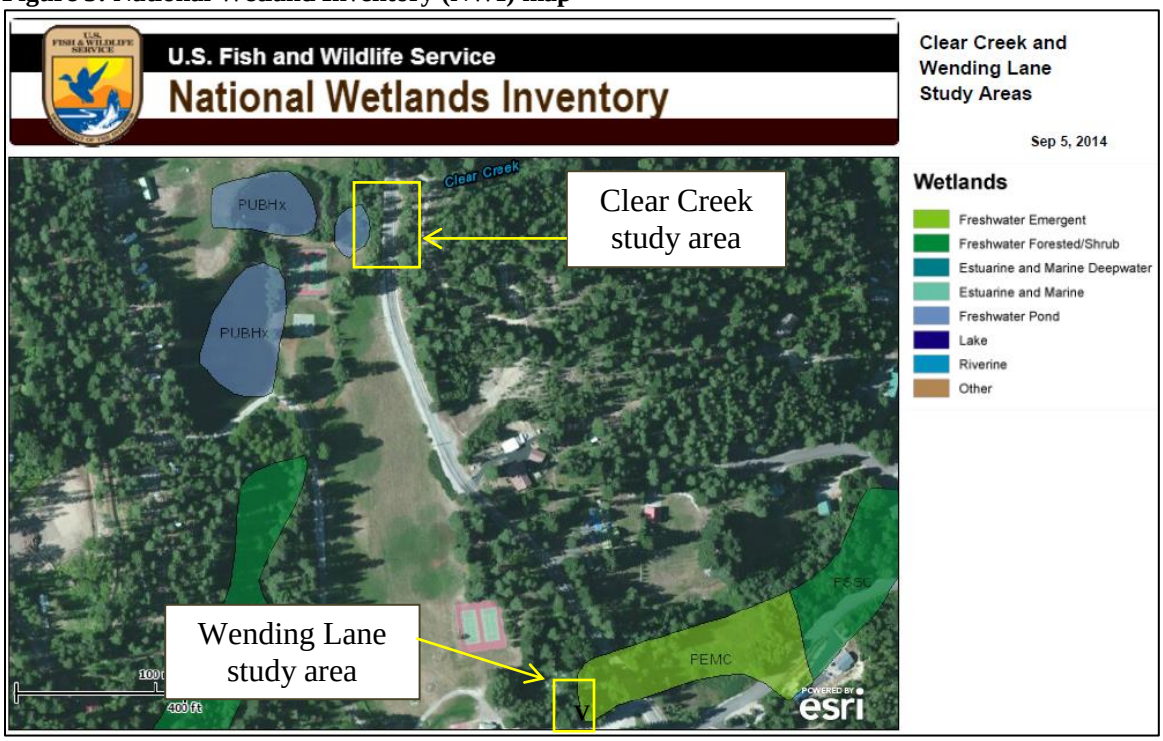
Table 3: Summary of Plant species identified within all data plots.

Species Name	Common Name
Tree Stratum	
Alnus Incana	Speckled Alder
Sapling/Shrub Stratum	
Cornus alba	Red Osier Dogwood
Symphoricarpos albus	Common Snowberry
Populus trichocarpa	Black cottonwood
Abies grandis	Grand fir
Herb Stratum	
Scirpus microcarpus	Small-fruited Bulrush
Phalaris arundinacea	Reed canary grass
Lysichiton americanus	Skunk cabbage
Phleum pretense	Common timothy

4.2 NATIONAL WETLANDS INVENTORY

The U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory online mapper identifies wetlands within or near the vicinity of the two project study areas. Refer to Figure 3 below.

Figure 3: National Wetland Inventory (NWI) map



In addition to providing initial data on the potential location of wetlands in the field, the NWI mapper also provides information on the potential wetland classes that may be found in a study area. These codes are based on *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin, et al. 1979).

The wetland mapper identifies PUBH (Palustrine, unconsolidated bottom, permanently flooded) wetlands in the vicinity of the Clear Creeks study area and PEMC (palustrine, emergent, seasonally flooded) wetlands in the vicinity of the Wending Lane study area.

The wetland boundaries and classifications identified by the NWI online mapper somewhat correspond to the wetland areas found in the field, but do not exactly duplicate the results of the field ground truth. Refer to Section 6 of this document for field results.

4.3 SENSITIVE WILDLIFE AND PLANTS

The Washington Department of Fish and Wildlife's (WDFW) Priority Habitats and Species (PHS) database was queried to determine if state or federally listed fish or wildlife species occur on or near the study areas. Further data for each study area is provided below.

4.3.1 Clear Creek study area

According to the PHS database, the Clear Creek study area is located within an occurrence/breeding/buffer management area for the Northern Spotted Owl (*Strix occidentalis*). The Northern Spotted Owl has a state status of endangered and a federal status of threatened.

In addition, this study area is located in the vicinity of Clear Creek. Clear Creek is mapped as supporting steelhead trout (Oncorhynchus mykiss), a federally threatened species.

The Clear Creek study area is not mapped as containing any priority habitats.

4.3.2 Wending Lane study area

According to the PHS database, the Wending Lane study area is located within an occurrence/breeding/buffer management area for the Northern Spotted Owl (*Strix occidentalis*). The Northern Spotted Owl has a state status of endangered and a federal status of threatened. There are no aquatic priority species mapped within the study area.

The Wending Lane study area is mapped as containing palustrine priority habitat.

4.3.3 Heritage plant species

The Washington Department of Natural Resources' (WDNR) Natural Heritage Information System was queried to determine if the study area occurs in a location reported to contain high quality natural heritage wetland occurrences or occurrences of natural heritage features commonly associated with wetlands. According to WDNR data, no instances of mapped high quality natural heritage wetlands are currently identified within the section, township, range of the study areas.

4.4 SOIL INFORMATION

4.4.1 Clear Creek Study Area

The Natural Resource Conservation Service's (NRCS) Soil Survey of the Chelan County Area, Washington (Parts of Chelan and Kittitas Counties – WA 607) identifies one soil type, BigCreek cindery sandy loam (16), within the Clear Creek study area. In addition, Nard silt loam, 25 to 45 percent slopes (NaE) and Gravel pits (25) are also identified in the vicinity of the study area. Refer to Figure 4.

Figure 4: Clear Creek study area mapped soil types

Bigcreek cindery sandy loam, 0 to 8 percent slopes, is a well-drained soil type commonly found on terraces. The parent material is volcanic ash and/or pumice over glacial outwash. The typical soil profile for this soil is as follows:

H1 – 0 to 5 inches: gravelly ashy sandy loam
H2 – 5 to 16 inches: gravelly ashy sandy loam
H3 – 16 to 30 inches: cinders
H4 – 30 to 33 inches: coarse sand
H5 – 33 to 38 inches: gravelly sandy loam
H6 – 38 to 60 inches: extreme gravelly sand

The general depth to a restrictive feature or water table is more than 80 inches. Bigcreek cindery sandy loam, 0 to 8 percent slopes, is not identified as a hydric soil (NRCS 2012).

4.4.2 Wending Lane Study Area

The Natural Resource Conservation Service's (NRCS) Soil Survey of the Chelan County Area, Washington (Parts of Chelan and Kittitas Counties – WA 607) identifies two soil types, BigCreek cindery sandy loam (16) and Peoh silt loam (Pe), within the Wending

Lane study area. In addition, Chiwawa gravelly fine sandy loam, 0 to 3 percent slopes is identified in the vicinity of the study area. Refer to Figure 5.

Figure 5: Wending Lane study area mapped soil types

For further description of Bigcreek cindery sandy loam refer to Section 4.4.7 of this document.

Peoh silt loam (Pe) is a poorly drained soil type commonly found in depression landforms. The parent material is alluvium. The typical soil profile is as follows:

H1 – 0 to 16 inches: silt loam
H2 – 16 to 32 inches: clay loam
H3 – 32 to 60 inches: sandy clay loam

The general depth to a restrictive feature or water table is more than 80 inches. Peoh silt loam (Pe) is not identified as a hydric soil (NRCS 2012).

5 RESULTS

The site assessment of the study area identified two separate wetland areas. Indicators of wetland hydrology, hydric soil characteristics, and dominant hydrophytic vegetation observed within the wetland system are summarized in Table 6 below and are described in greater detail in the remainder of the chapter.

Table 4: Wetland indicator summary

Wetland	Hydric Soil Indicators	Wetland Hydrology Indicators	Hydrophytic Vegetation	Dominant Vegetation Stratums
A - Clear Creek Study area	depleted below dark surface	high water table, saturation, water marks, and surface soil cracks	*Alnus Incana* – Speckled alder *Cornus alba* – red osier dogwood *Phalaris arundinacea* – Reed Canary grass *Lysichiton americanus* – Skunk cabbage	Tree and herb
B - Wending Lane Study Area	Inundation (Soil was too wet for identification of specific Hydric Soil indicators)	surface water, high water table, saturation, and water marks	*Alnus Incana* – Speckled alder *Cornus alba* – red osier dogwood *Phalaris arundinacea* – Reed Canary grass *Scirpus microcarpus* – small-fruited bulrush	Tree

5.1 WETLAND SYSTEM DESCRIPTIONS

5.1.1 Clear Creek Study Area – Wetland A

Wetland A is a forested/herbaceous riverine wetland system associated with Clear Creek.

Figure 6: Wetland A and data points

Note: Clear Creek crosses under Chiwawa Loop road to the north of the image as shown and traverses the wetland from north to south outside of the right of way to the west of the delineated wetland boundary as shown.

Vegetation

Dominant vegetation stratums within Wetland A include the tree/forested stratum, representing approximately 50% of the total cover, and herb/emergent stratum, representing approximately 90% of the total cover of the wetland system within the study area. Dominant plant species found within Wetland A are summarized in Table 7.

Table 5: Dominant Wetland Plant species summary table

Common Name	Scientific Name
Tree stratum	
Speckled Alder	*Alnus incana*
Sapling/Shrub stratum	
Red Osier Dogwood	*Cornus alba*
Herb Stratum	
Reed canary grass	*Phalaris arundinacea*
skunk cabbage	*Lysichiton americanus*

Hydrophytic vegetation indicators for this wetland included the rapid test for hydrophytic vegetation, prevalence indexes ranging from 1.72 to 1.875, and dominance test results (100% for both sample points). Based on these three indicators, the hydrophytic vegetation criterion for a wetland is passed.

Hydrology

Hydrologic support for the wetland system is provided primarily by Clear Creek as well as, to a more limited extent, groundwater and precipitation. Primary indicators of wetland hydrology observed within wetland system include high water table, saturation, water marks and surface soil cracks. No secondary indicators observed. Based on the observation of these primary indicators, the site passes the criterion for wetland hydrology.

Hydric Soils

Soils within the wetland system are mapped as Bigcreek cindery sandy loam, 0 to 8 percent slopes. The soil type found in the field was not consistent with the mapped soil type. The depth of soil test pit within the wetland was greater than 5 inches in depth and were generally comprised of dark brown (10YR 3/3) sandy loam between the horizon and 5 inches in depth. The soil deeper than 5 inches is gray (7.5YR 5/1) however the texture is hard to ascertain due to the hydrology. The primary hydric soil indicator observed within the wetland system was depleted below dark surface (Hydric Soil Indicator - A11). No indicators of problematic hydric soils were identified. Based on observed soils, the hydric soils criterion is passed.

5.1.2 Wending Lane Study Area – Wetland B

Wetland B is a depressional wetland system with a permanently flowing surface outlet.

Figure 7: Wetland B (Vicinity View)

Figure 8: Wetland B (Detail)

Note: the Cyan line represents the wetland boundary within the right of way, the yellow circles represent the location of the data points, and the purple line depicts the approximate location of the permanently flowing surface outlet. The field sheets for each data point are provided in Appendix A.

Vegetation

The dominant vegetation stratum within Wetland B is the tree stratum, which represents 40% of the total vegetation cover. The sapling/shrub and herb stratums are also represented in Wetland B to a lesser extent, each providing approximately 20% total wetland cover. Dominant plant species found within Wetland A are summarized in Table 8.

Table 6: Dominant Wetland Plant species summary table

Common Name	Scientific Name
Tree stratum	
Speckled Alder	*Alnus incana*
Sapling/Shrub stratum	
Red Osier Dogwood	*Cornus alba*
Herb Stratum	
Reed canary grass	*Phalaris arundinacea*
skunk cabbage	*Lysichiton americanus*
Red-tinge bulrush	*Scirpus microcarpus*

Hydrophytic vegetation indicators for this wetland included the rapid test for hydrophytic vegetation, prevalence indexes ranging from 1.72 to 1.875, and dominance test results (100% for both sample points). Based on these three indicators, the hydrophytic vegetation criterion for a wetland is passed.

Hydrology

Hydrologic support for the wetland system is provided primarily by groundwater and precipitation. Primary indicators of wetland hydrology observed within wetland system include areas of surface water, high water table, saturation, and water marks. No secondary indicators observed. Based on the observation of these primary indicators, the site passes the criterion for wetland hydrology.

Hydric Soils

Soils within the wetland system are mapped as Bigcreek cindery sandy loam (16) and Peoh silt loam (Pe). The soil in the wetland was too wet to determine a profile description and/or hydric soil indicators as a result of 12”+ of inundation. Based on the observed characteristics, the hydric soils criterion is passed.

6 DISCUSSION

6.1 FUNCTIONS AND VALUES

Wetlands provide a number of values and functions, such as fish and wildlife habitats, natural water quality improvement, flood storage, shoreline erosion protection and opportunities for recreation and aesthetic appreciation. Protecting wetlands can, in turn, protect our health and safety by reducing flood damage and preserving water quality. Although every wetland serves some function, the type and the degree to which a particular function is served varies from wetland to wetland.

To rate the relative functions of a certain wetland in comparison to other wetlands in the region, Ecology has developed the *Washington State Wetland Rating System for Eastern Washington* (Hruby 2004). This rating system categorizes wetlands using a function-based approach. Possible ratings range from Category I (highest-quality) to Category IV (lowest-quality). Wetlands are categorized based on their potential and opportunity to perform certain water quality, hydrologic, and habitat functions. These functions include filtering runoff, reducing flooding and erosion, and providing diverse and undisturbed habitat for a variety of wildlife species. Relative values are assigned based on the numeric level reached for each identified function (Table 6). Values assigned are based on the maximum points for each function with the upper 1/3 as being high, the lower 1/3 as being low, and the remainder as being moderate (Table 7).

Table 7: Wetland relative functional value range matrix

Function	High	Moderate	Low
Water Quality	24-32	11-23	1-10
Hydrologic	24-32	11-23	1-10
Habitat	24-36	13-23	1-12

Table 8: Study Area Wetland rating and categorization summary

Wetland	Cowardin Class	HGM Class	Water Quality	Hydrology	Habitat	Total	Category
A	R4EM/FO	Riverine	8 (low)	28 (high)	20 (moderate)	56	II
B	PFOE	Depressional	2 (low)	0 (n/a)	22 (moderate)	24	IV

6.1.1 Functions and Values of Wetland A

Based on the wetland rating form, Wetland A rates as a **Category II** wetland. The wetland scores low for water quality function; high for hydrology; and moderate for habitat function.

Wetland A scores low on water quality functionality because although it has the potential to improve water quality, such as vegetative cover and surface depressions, it lacks the opportunity. Opportunities to improve water quality, as identified in the rating form, include but are not limited to grazing occurring in or near the wetland, untreated stormwater flow inputs, and residential development and/or tilled fields or orchards within 150-feet of the wetland. As a result, the wetland system does not trigger the scoring multiplier as it relates to the opportunity to improve water quality.

The wetland system has a high functional value range for hydrologic function because it has both the potential to reduce flooding and erosion as well as the opportunity to reduce downstream flooding damage to human structures and activities as well as natural downstream resources such as salmon redds.

The wetland system scores moderate for habitat functional value. The moderate score is the result of characteristics such as the presence of multiple categories of vegetation structure, plant species richness, interspersion of habitat, special habitat features found within the wetland such as snags and large woody debris, and the proximity of other priority habitats.

Scoring for specific elements of each wetland function are determined by the Wetland Rating Forms, which are provided in Appendix B.

6.1.2 Functions and Values of Wetland B

Based on the wetland rating form, this wetland system rates as a **Category IV** wetland. The wetland system scores low for water quality function; receives no scoring for hydrology; and moderate for habitat function.

The wetland system scores low on water quality functionality because it has limited potential and opportunity to improve water quality. The system has a permanently flowing surface outlet as well as relatively small areas of ponding and persistent vegetation. These features, or lack thereof, prevent the system from potentially storing and treating water inflows. In addition, the system is not in the vicinity of areas that would serve to introduce pollutants into the groundwater or surface water such as grazing occurring in or near the wetland, untreated stormwater flow inputs, and residential development and/or tilled fields or orchards within 150-feet of the wetland. As a result, the wetland system does not trigger the scoring multiplier as it relates to the opportunity to improve water quality.

The wetland system does not score at all for hydrologic function. This is because although it has the opportunity to reduce flooding and erosion, given its proximity to other areas with flooding problems, it does not have the potential due to a lack of water storage and the existence of a permanently flowing surface outlet.

The wetland system scores moderate for habitat functional value. The moderate score is the result of characteristics such as the presence of multiple categories of vegetation structure, interspersion of habitat, special habitat features found within the wetland such as snags and large woody debris, and the proximity of other priority habitats.

Scoring for specific elements of each wetland function are determined by the Wetland Rating Forms, which are provided in Appendix B.

6.2 REGULATORY CONSIDERATIONS

Wetland buffer widths and mitigation requirements in Chelan County are determined based on the wetland rating. Standard buffer widths for low intensity development are presented in Chapter 11.80.060 of the Chelan County Code (CCC). The standard wetland buffer width for Category II wetland, such as the Clear Creek study area wetland system (Wetland A), in the vicinity of low-intensity land-use is **100 ft**. The standard wetland buffer width for Category IV wetland, such as the Wending Lane study area wetland system (Wetland B), in the vicinity of low-intensity land-use is **50 ft**.

Generally, wetlands and associated buffer zones are required to be retained in their natural, existing conditions. However, the Chelan County code does exempt certain activities from this requirement. For example, 11.80.020 (8) allows for the maintenance, reconstruction, repair, or operation of existing streets, highways, or roads outright in a wetland or buffer area provided the activity is conducted consistent with the standards and requirements of the critical areas chapter and all other applicable laws and regulations.

In the event that a development proposes new impacts to a wetland or buffer, the project proponent must first demonstrate that all reasonable efforts have been examined with the intent to avoid and minimize impacts to the functions and values of the wetland. If it is determined that project impacts to the wetland and/or wetland buffer are indeed unavoidable, a Wetland Mitigation Plan is required pursuant to CCC 11.80.110.

Non-isolated wetlands are also regulated by the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act. If the USACE were to exert jurisdiction, a Section 404 permit from the USACE would only be required if filling, grading, vegetation removal or other development activities are proposed within the limits of the wetland. The Corps project manager for the Chelan County area should be contacted prior to any proposed activity occurring within the wetland to determine if a USACE permit is necessary.

7 Bibliography

Beieler, Vern E. Soil Survey of Chelan Area, Washington, Parts of Chelan and Kittitas Counties, 1975. United States Department of Agriculture in cooperation with the Washingotn Agricultural Experiment Station.

Cowardin, L. M., Carter, V., Golet, F. C., & LaRoe, E. T. (1979). *Classification of wetlands and deepwater habitats of the United States.* Office of Biological Services, FWS, US Dept. of the Interior.

Fortner, 2012. National Hydric Soils List Excel 2012. U.S. Department of Agriculture, Natural Resources Conservation Service, Washington, DC.

Hruby, T. (2006). *Washington State wetland rating system for Eastern Washington - Revised.* WA Dept of Ecology.

Lichvar, R. W.(2014). *Western Mountains, Valleys, and Coast 2014 Final Regional Wetland Plant List.* Hanover, NH: U.S. Army Corps of Engineers, Engineering Research and Development Center, Cold Regions Research and Engineering Laboratory.

2013. ISSN 2153 733X Munsell(R) Color. (2000). *Munsell soil color charts.* New Windsor, NY.

Natural Resources Conservation Service. (2012). *Washington Soil Survey Reports*. Retrieved 9/1/2011, from Web Soil Survey: http://www.or.nrcs.usda.gov/pnw_soil/wa_reports.html

Reed, P.B., Jr., D. Peters, J Goudzwaard, I. Lines, and F. Weinmann. 1993. Supplement to National List of Plant Species That Occur in Wetlands: Northwest Region 9. U.S. Fish & Wildlife Service. Supplement to Biol. Rep. 88 (26.9).

U.S. Army Corps of Engineers (USACE). (1987). *Field Guide for Wetland Delineation: 1987 Corps of Engineers Manual.* Technical Report.

U.S. Army Corps of Engineers. (2010). *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), eds. J.S. Wakeley, R.W. Lichvar, and C.V. Noble.* Vicksburg, MS: U.S. Army Engineer Research and Development Center.

Washington State Department of Ecology (Ecology). 1997. Washington State Wetlands Identification and Delineation Manual. Publication #96-94. Olympia, Washington.

CHIWAWA LOOP ROAD:
PHASE III ROADWAY RECONSTRUCTION
WETLAND DELINEATION

CHELAN COUNTY PUBLIC WORKS

ATTACHMENT A: WETLAND DATA SHEETS

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

Project/Site: Clear Creek study area | City/County: Chelan County | Sampling Date: 7/25/2014
Applicant/Owner: CCPW | State: WA | Sampling Point: A-1
Investigator(s): R. Walker | Section: 32 Township: 27N Range: 18E
Landform (hillslope, terrace, etc.): terrace | Local relief (concave☐, convex☐, none☒: | Slope (%): 0%
Subregion (LRR): A, Northwest Forests and Coasts | Lat: 47.799397 Long: -120.631747 | Datum: NAD83
Soil Map Name: Bigcreek cindery sandy loam, 0 to 8 % slopes | NWI Classification: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks)
Are Vegetation ☐ Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐ Soil ☐, or Hydrology ☐ significantly problematic? (If needed, explain in Remarks)

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

Hydrophytic vegetation present?	Yes ☐ No ☒	**Is the sampled area within a wetland? Yes ☐ No ☒**
Hydric soils present?	Yes ☐ No ☒	
Wetland hydrology present?	Yes ☐ No ☒	

Remarks:

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size:30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus Incana - Speckled Alder*	40	Y	FACW
2.			
3.			
4.			
	40	= Total Cover	
Sapling/Shrub Stratum (Plot size:5' r)			
1. *Symphoricarpos albus - common Snowberry*	50	Y	FACU
2. *Populus trichocarpa - black cottonwood*	5	N	FAC
3. *abies grandis - grand fir*	2	N	FACU
4.			
5.			
6.			
	57	= Total Cover	
Herb Stratum (Plot size:5' r)			
1. *Phleum pratense - Common Timothy*	1	N	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	1	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
	0%	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	**x 1 =** 0
FACW species	40	**x 2 =** 80
FAC species	6	**x 3 =** 18
FACU species	52	**x 4 =** 208
UPL species	0	**x 5 =** 0
Column Totals	98 (A)	306 (B)

Prevalence index = B/A = 3.12

Hydrophytic Vegetation indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
- ☐ 5 – Wetland non-vascular plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic vegetation present? Yes ☐ No ☒

Remarks:

SOIL

Sampling Point: A-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 3/3	100	none				sandy loam	

[1]Type: C=Concentration; D=Depletion; RM=Reduced matrix; CS=Covered or Coated Sand Grains. [2] Location: PL=Pore linings; M=Matrix

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Material (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Material (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations

Surface Water Present? Yes ☐ No ☒ Depth (in.) _____

Water Table Present? Yes ☐ No ☒ Depth (in.) _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (in.) _____

Wetland Hydrology Present? Yes ☐ **No** ☒

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

Remarks: very dry

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

Project/Site: Clear Creek | City/County: Chelan County | Sampling Date: 7/25/2014
Applicant/Owner: CCPW | State: WA | Sampling Point: A-2
Investigator(s): R. Walker | Section: 32 Township: 27N Range: 18E
Landform (hillslope, terrace, etc.): terrace | Local relief (concave☐, convex☐, none☒: | Slope (%): 0%
Subregion (LRR): A, Northwest Forests and Coasts | Lat: 47.799397 Long: -120.631747 | Datum: NAD83
Soil Map Name: Bigcreek cindery sandy loam, 0 to 8 % slopes | NWI Classification: Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks)
Are Vegetation ☐ Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐ Soil ☐, or Hydrology ☐ significantly problematic? (If needed, explain in Remarks)

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

Hydrophytic vegetation present?	Yes ☒ No ☐	**Is the sampled area within a wetland? Yes ☒ No ☐**
Hydric soils present?	Yes ☒ No ☐	
Wetland hydrology present?	Yes ☒ No ☐	

Remarks:

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size:30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus Incana - Speckled Alder*	50	Y	FACW
2.			
3.			
4.			
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size:5' r)			
1. *Cornus stolenifera - red osier dogwood*	5	Y	FACW
2.			
3.			
4.			
5.			
6.			
	5	= Total Cover	
Herb Stratum (Plot size:5' r)			
1. *Phalaris arundinacea - reed canary grass*	50	Y	FACW
2. *Lysichiton americanus - skunk cabbage*	40	Y	OBL
3.			
4.			
5.			
6.			
7.			
8.			
	90	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	40	**x 1 =** 40
FACW species	105	**x 2 =** 210
FAC species	0	**x 3 =** 0
FACU species	0	**x 4 =** 0
UPL species	0	**x 5 =** 0
Column Totals	145 (A)	250 (B)

Prevalence index = B/A = 1.72

Hydrophytic Vegetation indicators:

☒ 1 – Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
☒ 3 - Prevalence Index is ≤3.0[1]
☐ 4 - Morphological Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
☐ 5 – Wetland non-vascular plants[1]
☐ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic vegetation present? Yes ☒ No ☐

Remarks:

SOIL

Sampling Point: A-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/3	100	none				sandy loam	
5+	7.5YR 5/1	100						pep/ded

[1]Type: C=Concentration; D=Depletion; RM=Reduced matrix; CS=Covered or Coated Sand Grains. [2] Location: PL=Pore linings; M=Matrix

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☒ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Material (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Material (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes ☒ **No** ☐

Remarks: soils very wet difficult to get accurate profile and color. Clearly in wetland.

HYDROLOGY

Wetland Hydrology Indicators

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

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☒ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☒ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations

Surface Water Present? Yes ☐ No ☒ Depth (in.) _____

Water Table Present? Yes ☒ No ☐ Depth (in.) 0

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (in.) 0

Wetland Hydrology Present? Yes ☒ **No** ☐

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

Remarks:

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

Project/Site: Wending Lane | City/County: Chelan County | Sampling Date: 7/25/2014
Applicant/Owner: CCPW | State: WA | Sampling Point: B-1
Investigator(s): R. Walker | Section: 32 Township: 27N Range: 18E
Landform (hillslope, terrace, etc.): terrace | Local relief (concave☐, convex☐, none☒: | Slope (%): 0%
Subregion (LRR): A, Northwest Forests and Coasts | Lat: 47.796448 Long: -120.628965 | Datum: NAD83
Soil Map Name: Bigcreek cindery sandy loam, 0 to 8% slopes | NWI Classification: Wetland (PFOE)
Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks)
Are Vegetation ☐ Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐ Soil ☐, or Hydrology ☐ significantly problematic? (If needed, explain in Remarks)

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

Hydrophytic vegetation present?	Yes ☒ No ☐	**Is the sampled area within a wetland? Yes ☐ No ☒**
Hydric soils present?	Yes ☐ No ☒	
Wetland hydrology present?	Yes ☐ No ☒	

Remarks:

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size:30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size:5' r)			
1. *Cornus stolenifera - red osier dogwood*	60	Y	FACW
2.			
3.			
4.			
5.			
6.			
	60	= Total Cover	
Herb Stratum (Plot size:5' r)			
1. *Phalaris arundinacea - reed canary grass*	40	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	40	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	**x 1 =** 0
FACW species	100	**x 2 =** 200
FAC species	0	**x 3 =** 0
FACU species	0	**x 4 =** 0
UPL species	0	**x 5 =** 0
Column Totals	100 (A)	200 (B)

Prevalence index = B/A = 2

Hydrophytic Vegetation indicators:

☒ 1 – Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
☒ 3 - Prevalence Index is ≤3.0[1]
☐ 4 - Morphological Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
☐ 5 – Wetland non-vascular plants[1]
☐ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic vegetation present? Yes ☒ No ☐

Remarks:

SOIL

Sampling Point: B-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/3	100					sandy loam	

[1]Type: C=Concentration; D=Depletion; RM=Reduced matrix; CS=Covered or Coated Sand Grains. [2] Location: PL=Pore linings; M=Matrix

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Material (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Material (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations

Surface Water Present? Yes ☐ No ☒ Depth (in.) _____

Water Table Present? Yes ☐ No ☒ Depth (in.) _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (in.) _____

Wetland Hydrology Present? Yes ☐ **No** ☒

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

Remarks: Dry.

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

Project/Site: Wending Lane | City/County: Chelan County | Sampling Date: 7/25/2014
Applicant/Owner: CCPW | State: WA | Sampling Point: B-2
Investigator(s): R. Walker | Section: 32 Township: 27N Range: 18E
Landform (hillslope, terrace, etc.): terrace | Local relief (concave☐, convex☐, none☒: | Slope (%): 0%
Subregion (LRR): A, Northwest Forests and Coasts | Lat: 47.796448 Long: -120.628965 | Datum: NAD83
Soil Map Name: Bigcreek cindery sandy loam, 0 to 8% slopes | NWI Classification: Wetland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks)
Are Vegetation ☐ Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐ Soil ☐, or Hydrology ☐ significantly problematic? (If needed, explain in Remarks)

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

Hydrophytic vegetation present?	Yes ☒ No ☐	**Is the sampled area within a wetland? Yes ☒ No ☐**
Hydric soils present?	Yes ☒ No ☐	
Wetland hydrology present?	Yes ☒ No ☐	

Remarks:

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size:30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus incana - Speckled Alder*	40	Y	FACW
2.			
3.			
4.			
	40	= Total Cover	
Sapling/Shrub Stratum (Plot size:10'r)			
1. *Cornus stolenifera - red osier dogwood*	20	Y	FACW
2.			
3.			
4.			
5.			
6.			
	20	= Total Cover	
Herb Stratum (Plot size:10'r)			
1. *Scirpus microcarpus - Red-tinge bulrush*	10	Y	OBL
2. *Phalaris arundinacea - reed canary grass*	10	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	20	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	10	**x 1 =** 10
FACW species	70	**x 2 =** 140
FAC species	0	**x 3 =** 0
FACU species	0	**x 4 =** 0
UPL species	0	**x 5 =** 0
Column Totals	80 (A)	150 (B)

Prevalence index = B/A = 1.875

Hydrophytic Vegetation indicators:

☒ 1 – Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
☒ 3 - Prevalence Index is ≤3.0[1]
☐ 4 - Morphological Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
☐ 5 – Wetland non-vascular plants[1]
☐ Problematic Hydrophytic Vegetation[1] (explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic vegetation present? Yes ☒ No ☐

Remarks:

SOIL

Sampling Point: B-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration; D=Depletion; RM=Reduced matrix; CS=Covered or Coated Sand Grains. [2] Location: PL=Pore linings; M=Matrix

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Material (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Material (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? Yes ☒ **No** ☐

Remarks: Soil too wet. and clearly wetland 12" + innundation + obligate vegetation.

HYDROLOGY

Wetland Hydrology Indicators

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

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☒ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations

Surface Water Present? Yes ☒ No ☐ Depth (in.) 12+

Water Table Present? Yes ☐ No ☐ Depth (in.) _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☐ Depth (in.) _____

Wetland Hydrology Present? Yes ☒ **No** ☐

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

Remarks: Creek backed up by culvert under the road, Access road is free flowing and non-wetland.

CHIWAWA LOOP ROAD:
PHASE III ROADWAY RECONSTRUCTION
WETLAND DELINEATION

CHELAN COUNTY PUBLIC WORKS

ATTACHMENT B: WETLAND RATING FORMS

Wetland name or number _____

WETLAND RATING FORM – EASTERN WASHINGTON

Version 2 - Updated June 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): Clear Creek Date of site visit: 7/25/14

Rated by RW - Grette Associates Trained by Ecology? Yes✓ No___ Date of training 9/05

SEC: ___ TWNSHP: ____ RNGE: ____ Is S/T/R in Appendix D? Yes___ No___

Map of wetland unit: Figure ____ Estimated size _____

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II✓ III___ IV___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for "Water Quality" Functions	8
Score for Hydrologic Functions	28
Score for Habitat Functions	20
TOTAL score for functions	56

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ III___ Does not Apply✓

Final Category (choose the "highest" category from above) II

Summary of basic information about the wetland unit

Wetland Type		Wetland Class	
Vernal Pool		**Depressional**	
Alkali		**Riverine**	✓
Natural Heritage Wetland		**Lake-fringe**	
Bog		**Slope**	
Forest			
None of the above		Check if unit has multiple HGM classes present	

Wetland name or number _____

Does the wetland being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		✓

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. Classifying the wetland first simplifies the questions needed to answer how it functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 20 for more detailed instructions on classifying wetlands.

Wetland name or number _____

Classification of Vegetated Wetlands for Eastern Washington

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 1-7 apply, and go to Question 8.

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

___The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

___At least 30% of the open water area is deeper than 3 m (10 ft)?

✓ NO – go to Step 2 **YES** – The wetland class is **Lake-fringe (lacustrine fringe)**

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

____The wetland is on a slope (*slope can be very gradual*),

____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

____The water leaves the wetland **without being impounded**?

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 <3ft diameter and less than a foot deep).*

✓ NO - go to Step 3 **YES** – The wetland class is **Slope**

3. Is the entire wetland unit in a valley or stream channel where it gets inundated by overbank flooding from that stream or river? In general, the flooding should occur at least once every ten years to answer "yes." *The wetland can contain depressions that are filled with water when the river is not flooding.*

NO - go to Step 4 ✓ **YES** – The wetland class is **Riverine**

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

NO – go to Step 5 **YES** – The wetland class is **Depressional**

5. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. 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 1-7 APPLY TO DIFFERENT AREAS IN THE 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 your 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 class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes Within One Delineated Wetland Boundary	Class to Use for Rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine (riverine is within boundary of depression)	Depressional
Depressional + Lake-fringe	Depressional

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

Wetland name or number _____

R	**Riverine Wetlands** WATER QUALITY FUNCTIONS - Indicators that the wetland functions to improve water quality	**Points** (only 1 score per box)
R	**R 1.0 Does the wetland unit have the <u>potential</u> to improve water quality?**	*(see p. 45)*
R	R 1.1 Area of surface depressions within the riverine unit that can trap sediments during a flooding event: Depressions cover >1/3 area of wetland points = 6 Depressions cover > 1/10 area of wetland points = 3 ✓ If depressions > 1/10th of area of unit draw polygons on aerial photo or map Depressions present but cover < 1/10 area of wetland points = 1 No depressions present points = 0	**Figure ___** 3
R	R 1.2 Characteristics (cover) of the vegetation in the unit *(area of polygons with >90% cover at person height. This is **not** Cowardin vegetation classes)*: Forest or shrub > 2/3 the area of the wetland points = 10 Forest or shrub 1/3 – 2/3 area of the wetland points = 5 ✓ Ungrazed, herbaceous plants > 2/3 area of wetland points = 5 Ungrazed herbaceous plants 1/3 – 2/3 area of wetland points = 2 Forest, shrub, and ungrazed herbaceous < 1/3 area of wetland points = 0 Aerial photo or map showing polygons of different vegetation cover	**Figure ___** 5
R	**Total for R1** *Add the points in the boxes above*	8
R	**R 2.0 Does the wetland have the <u>opportunity</u> to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150ft — Wetland intercepts groundwater within the Reclamation Area — Untreated stormwater flows into wetland — Tilled fields or orchards within 150 feet of wetland — Water flows into wetland from a stream or culvert that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential or urban areas are within 150 ft of wetland — The river or stream that floods the wetland has a contributing basin where human activities have raised the levels of sediment, toxic compounds or nutrients in the river water above water quality standards — Other_____ **YES** multiplier is **2** ✓ **NO** multiplier is **1**	*(see p.46)* multiplier 1
R	**<u>TOTAL</u> - Water Quality Functions** Multiply the score from R1 by the multiplier in R2 ***Record score on p. 1 of field form***	**8**

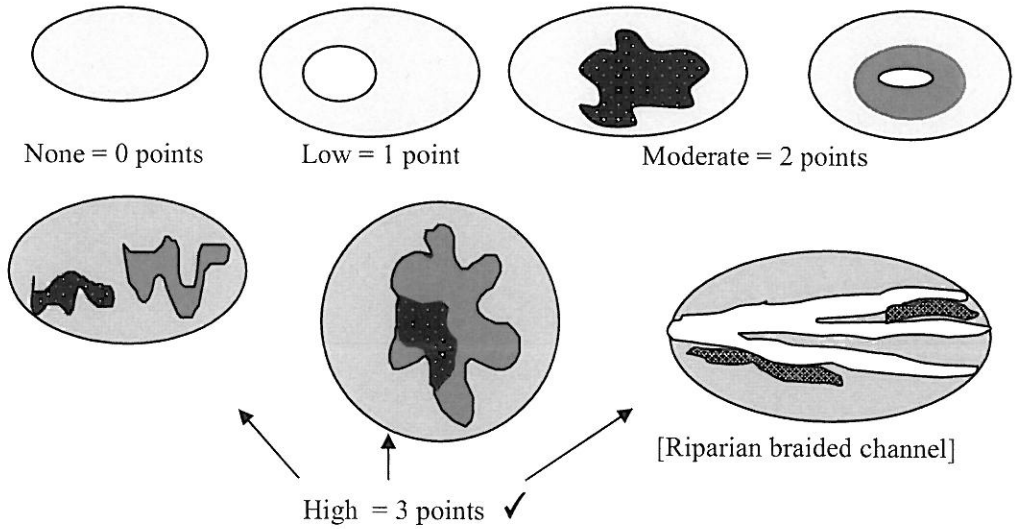
Wetland name or number _____

R	**Riverine Wetlands** HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
R	**R 3.0 Does the wetland have the <u>potential</u> to reduce flooding and erosion?**	*(see p. 47)*
R	R 3.1 Amount overbank storage the wetland provides: *Estimate the average width of the wetland perpendicular to the direction of the flow of water and the width of the stream or river channel (distance between banks).* *Calculate the ratio: width of wetland/ width of stream.* If the ratio is 2 or more — points = 10 ✓ If the ratio is between 1 and < 2 — points = 8 If the ratio is ½ to < 1 — points = 4 If the ratio is ¼ to < ½ — points = 2 If the ratio is < ¼ — points = 1 Aerial photo or map showing average widths	**Figure ___** 10
R	R 3.2 Characteristics of vegetation that slow down water velocities during floods: *Treat large woody debris as "forest or shrub" (area of polygons with >90% cover at person height. This is **not** Cowardin vegetation classes)*: Forest or shrub for more than 2/3 the area of the wetland. — points = 6 Forest or shrub for >1/3 area OR herbaceous plants > 2/3 area — points = 4 ✓ Forest or shrub for > 1/10 area OR herbaceous plants > 1/3 area — points = 2 Vegetation does not meet above criteria — points = 0 Aerial photo or map showing polygons of different vegetation types	**Figure ___** 4
R	**Total for R3** *Add the points in the boxes above*	14
R	**R 4.0 Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** *Answer NO if the major source of water is irrigation return flow or water levels are controlled by a reservoir.* Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. *Note which of the following conditions apply.* ✓ There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding. ✓ There are natural resources downstream (e.g. salmon redds) than can be damaged by flooding — Other_____ ✓ **YES** multiplier is **2** **NO** multiplier is **1**	*(see p. 50)* multiplier 2
R	**TOTAL - Hydrologic Functions** Multiply the score from R3 by the multiplier in R4 ***Record score on p. 1 of field form***	**28**

Comments

Wetland name or number _____

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Categories of vegetation structure</u> ***(see p.62)*** *Check the vegetation classes (as defined by Cowardin) and heights of emergents present. Size threshold for each class or height category is ¼ acre or more than 10% of the area if unit is < 2.5 acres.* ____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 – 100cm) high are the highest layer with >30% cover __✓__Emergent plants > 40 in.(> 100cm) high are the highest layer with >30% cover __✓__ Scrub/shrub (areas where shrubs have >30% cover) __✓__Forested (areas where trees have >30% cover) *Add the number of vegetation types that qualify. If you have:* 4-6 types points = 3 ✓ 3 types points = 2 2 types points = 1 1 type points = 0 Map of Cowardin vegetation classes and areas with different heights of emergents	**Figure ___** 3
H 1.2. Is one of the vegetation types "aquatic bed?" ***(see p .64)*** YES = 1 point ✓ NO = 0 points	0
H 1.3. <u>Surface Water</u> ***(see p.65)*** H 1.3.1 Does the unit have areas of "open" water (without herbaceous or shrub plants) over at least ¼ acre or 10% of its area during the spring (March – early June) OR in early fall (August – end of September)? *Note: 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 unit have an intermittent or permanent stream within its boundaries, or along one side, over at least ¼ acre or 10% of its area, AND that has an unvegetated bottom (*answer yes only if H 1.3.1 is NO*)? ✓ YES = 3 points NO = 0 points Map showing areas of open water	**Figure ___** 3
H 1.4. <u>Richness of Plant Species</u> ***(see p. 66)*** Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasean Milfoil, reed canarygrass, purple loosestrife, Russian Olive, Phragmites ,Canadian Thistle, Yellow-flag Iris, and Salt Cedar (Tamarisk)* If you counted: > 9 species ✓ points = 2 4-9 species points = 1 # of species ____ < 4 species points = 0 points *List species below if you wish*	2

H 1.5. Interspersion of habitats *(see p. 67)* Decided from the diagrams below whether interspersion between categories of vegetation (described in H 1.1), or categories and un-vegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points Low = 1 point Moderate = 2 points [Riparian braided channel] High = 3 points ✓ NOTE: If you have four or more vegetation categories or three vegetation categories and open water the rating is always "high". Use maps from H1.1 and H1.3	**Figure ___** 3
H 1.6. Special Habitat Features: *(see p. 68)* *Check the habitat features that are present in the wetland unit. The number of checks is the number of points you put into the next column.* ✓ Loose rocks larger than 4" **or** large, downed, woody debris (>4in. diameter) within the area of surface ponding or in stream. ✓ Cattails or bulrushes are present within the unit. ✓ Standing snags (diameter at the bottom > 4 inches) in the wetland unit or within 30 m (100ft) of the edge. ____ Emergent or shrub vegetation in areas that are permanently inundated/ponded. *The presence of "yellow flag" Iris is a good indicator of vegetation in areas permanently 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)* *Maximum score possible = 6*	3
TOTAL Potential to provide habitat *Add the scores in the column above*	14

Comments

Wetland name or number _____

H 2.0 Does the wetland have the opportunity to provide habitat for many species?	
H 2.1 Buffers ***(see p. 71)*** *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed." Relatively undisturbed also means no grazing, no landscaping, no daily human use, and no structures or paving within undisturbed part of buffer.* — 330ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference **Points = 5** — 330 ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 170ft (50 m) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 330ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 170ft (50 m) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 80ft (25 m) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** ✓ No paved areas or buildings within 170ft (50m) of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** — Vegetated buffers are <6.6ft wide (2m) for more than 95% of the circumference (e.g . tilled fields, paving, basalt bedrock extend to edge of wetland). **Points = 0** — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	**Figure ___** 2
H 2.2 Wet Corridors ***(see p. 72)*** H 2.2.1 Is the wetland unit part of a relatively undisturbed and unbroken, > 30 ft wide, vegetated corridor at least ¼ mile long with surface water or flowing water throughout most of the year (> 9 months/yr)? (*dams, heavily used gravel roads, paved roads, fields tilled to edge of stream, or pasture to edge of stream are considered breaks in the corridor*). YES = 4 points (go to H 2.3) ✓ NO = go to H 2.2.2 H 2.2.2 Is the unit part of a relatively undisturbed and unbroken, > 30 ft wide, vegetated corridor, at least ¼ mile long with water flowing seasonally, **OR** a lake-fringe wetland without a "wet" corridor, **OR** a riverine wetland without a surface channel connecting to the stream? YES = 2 points (go to H 2.3) ✓ NO go to H 2.2.3 H 2.2.3 Is the wetland within a 1/2 mile of any permanent stream, seasonal stream, or lake (*do not include man-made ditches*)? ✓ YES = 1 point NO = 0 points	1

Wetland name or number _____

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)*** Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections to the habitats can be disturbed.* ____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____**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 p. 152*). ____ **Eastside Steppe:** Non-forested vegetation type dominated by broadleaf herbaceous flora ((*full description of herbaceous species found here are in WDFW PHS report p. 153*). ____**Old-growth/Mature forests (east of Cascade crest):** (*full descriptions in WDFW PHS report p. 157*). Old-growth: Stands are > 150 yrs in age; may be variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. Mature: Stands 80 – 160 yrs old. Decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. ____**Oregon white Oak:** Woodlands 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*). ____ **Juniper Savannah**: All juniper woodlands (*SE part of state only; check map*) ____ **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). _✓_ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____Inland Dunes This placeholder is for a new priority habitat that will capture areas known as Inland Dunes. A definition will be developed later in Fall 2008. *(check WDFW web site)* _✓_ **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 7.6 m (25 ft) high and occurring below 5000 ft. ____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), 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 > 30 cm (12 in) in eastern Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **2 or more** Priority Habitats = **4 points** If wetland has **1** Priority Habitat = **2 points** No Priority habitats = **0 points** *Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)*	2

Wetland name or number _____

H 2.4 Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 76)*** — The wetland unit is in an area where annual rainfall is less than 12 inches, and its water regime is not influenced by irrigation practices, dams, or water control structures. (*Generally, this means outside boundaries of reclamation areas, irrigation district, or reservoirs*) **points = 5** — There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing in the connection or an open water connection along a lake shore without heavy boat traffic are OK, but connections should NOT be bisected by paved roads, fill, fields, heavy boat traffic or other development) **points = 5** — There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed? **points = 2** ✓ There is at least 1 wetland within ½ mile. **points = 1** — Does not meet any of the four criteria above **points = 0**	1
H 2. TOTAL Score - opportunity for providing habitat *Add the scores in the column above*	6
H 3.0 Does the wetland unit have indicators that its ability to provide habitat is reduced?	
H 3.1 Indicator of reduced habitat functions ***(see p. 75)*** Do the areas of open water in the wetland unit have a resident population of carp (see text for indicators of the presence of carp)? *(NOTE: This question does not apply to reservoirs with water levels controlled by dams, such as the reservoirs on the Columbia and Snake Rivers)* YES = **- 5 points** ✓ NO = 0 points	*Points will be subtracted* 0
Total Score for Habitat Functions – *add the points for H 1, H 2, and H 3 and record the result on p. 1*	**20**

Comments

Wetland name or number _____

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland unit meets the attributes described below and circle the appropriate Category. NOTE: A wetland may meet the criteria for more than one set of special characteristics. Record all those that apply. NOTE: All units should also be characterized based on their functions.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	Category
SC 1.0 Vernal pools ***(see p. 79)*** Is the wetland unit **less than 4000 ft^2**, and does it meet at least **two** of the following criteria? — Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input — Wetland plants are typically present only in the spring; the summer vegetation is typically upland annuals. *NOTE: If you find perennial, "obligate", wetland plants the wetland is probably NOT a vernal pool* — The soil in the wetland are shallow (<1ft deep (30 cm)) and is underlain by an impermeable layer such as basalt or clay. — Surface water is present for less than 120 days during the "wet" season. YES = Go to SC 1.1 ✓ NO - *not a vernal pool* SC 1.1 Is the vernal pool relatively undisturbed in February and March? YES = Go to SC 1.2 NO – *not a vernal pool with special characteristics*	
SC 1.2 Is the vernal pool in an area where there are at least 3 separate aquatic resources within 0.5 miles (other wetlands, rivers, lakes etc.)? YES = Category II NO = Category III	**Cat. II** **Cat. III**
SC 2.0 Alkali wetlands ***(see p. 81)*** Does the wetland unit meets **one** of the following two criteria? — The wetland has a conductivity > 3.0 mS/cm. — The wetland has a conductivity between 2.0 - 3.0 mS, and more than 50% of the plant cover in the wetland can be classified as "alkali" species (see Table 2 for list of plants found in alkali systems). — If the wetland is dry at the time of your field visit, the central part of the area is covered with a layer of salt. **OR** does the wetland unit meets two of the following three sub-criteria? — Salt encrustations around more than 80% of the edge of the wetland — More than ¾ of the plant cover consists of species listed on Table 2 — A pH above 9.0. All alkali wetlands have a high pH, but please note that some freshwater wetlands may also have a high pH. Thus, pH alone is not a good indicator of alkali wetlands. YES = Category I ✓ NO – *not an alkali wetland*	**Cat. I**

SC 3.0 Natural Heritage Wetlands ***(see p. 81)*** Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 3.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ✓ or accessed from WNHP/DNR database ✓ YES____ – contact WNHP/DNR (see p. 79) and go to SC 3.2 NO ✓ SC 3.2 Has DNR identified the wetland unit as a high quality undisturbed wetland or as or as a site with state threatened, endangered, or sensitive plant species? YES = Category I NO –*not a natural heritage wetland*	**Cat. I**
SC 4.0 Bogs ***(see p. 82)*** Does the wetland unit **(or any part of the wetland unit)** meet both the criteria for soils and vegetation in bogs. *Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.* SC 4.1. Does the wetland unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to SC 4.3 ✓ No - go to SC 4.2 SC 4.2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond?? Yes - go to SC 4.3 ✓ No - *Is not a bog for rating* SC 4.3. Does the wetland unit have more than 70% cover of mosses at ground level in any area within its boundaries, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Category I bog No - go to Q. 4.4 *NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.*	**Cat. I**
SC 4.4. Is the unit, or any part of it, forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* Yes – Category I bog NO	**Cat. I**

SC 5.0 Forested Wetlands ***(see p. 85)*** Does the wetland unit have an area of forest (*you should have identified a forested class, if present, in question H 1.1*) rooted within its boundary that meet **at least one** of the following three criteria? — The wetland is within the "100 year" floodplain of a river or stream — aspen (*Populus tremuloides*) are a dominant or co-dominant of the "woody" vegetation. (*Dominants means it represents at least 50% of the cover of woody species, co-dominant means it represents at least 20% of the total cover of woody species*) — There is at least ¼ acre of trees (even in wetlands smaller than 2.5 acres) that are "mature" or "old-growth" according to the definitions for these priority habitats developed by WDFW *(see p. 83)* YES = go to SC 5.1 ✓ NO –*not a forested wetland with special characteristics*	
SC 5.1 Does the wetland unit have a forest canopy where more than 50% of the tree species (by cover) are slow growing native trees Slow growing trees are: western red cedar (*Thuja plicata*), Alaska yellow cedar (*Chamaecyparis nootkatensis*), pine spp. mostly "white" pine (*Pinus monticola*), western hemlock (*Tsuga heterophylla*), Englemann spruce (*Picea engelmannii*). YES = Category I ✓ NO = go to SC 5.2	**Cat. I**
SC 5.2 Does the unit have areas where aspen (*Populus tremuloides*) are a dominant or co-dominant species? YES = Category I ✓ NO = go to SC 5.3	**Cat. I**
SC 5.3 Does the wetland unit have areas with a forest canopy where more than 50% of the tree species (by cover) are fast growing species. Fast growing species are: Alders – red (*Alnus rubra*), thin-leaf (*A. tenuifolia*) Cottonwoods – narrow-leaf (*Populus angustifolia*), black (*P. balsamifera*) Willows- peach-leaf (*Salix amygdaloides*), Sitka (*S. sitchensis*), Pacific (*S. lasiandra*), Aspen - (*Populus tremuloides*), Water Birch (*Betula occidentalis*) YES = Category II ✓ NO = go to SC 5.5	**Cat. II**
SC 5.5 Is the forested component of the wetland within the "100 year floodplain" of a river or stream? YES = Category II	**Cat. II**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories.* If you answered NO for all types enter "Not Applicable" on p.1	**N/A**

Wetland name or number B

WETLAND RATING FORM – EASTERN WASHINGTON

Version 2 - Updated June 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): Wending Lane study area Date of site visit: 7/25/14

Rated by RW - Grette Associates Trained by Ecology? Yes ✓ No___ Date of training 9/05

SEC: 32 TWNSHP: 27N RNGE: 18E Is S/T/R in Appendix D? Yes___ No ✓

Map of wetland unit: Figure ____ Estimated size _____

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___ IV ✓

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for "Water Quality" Functions	2
Score for Hydrologic Functions	0
Score for Habitat Functions	22
TOTAL score for functions	24

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ III___ Does not Apply ✓

Final Category (choose the "highest" category from above) IV

Summary of basic information about the wetland unit

Wetland Type		Wetland Class	
Vernal Pool		**Depressional**	✓
Alkali		**Riverine**	
Natural Heritage Wetland		**Lake-fringe**	
Bog		**Slope**	
Forest			
None of the above		Check if unit has multiple HGM classes present	

Wetland name or number _____

Does the wetland being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		✓

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. Classifying the wetland first simplifies the questions needed to answer how it functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 20 for more detailed instructions on classifying wetlands.

Wetland name or number _____

Classification of Vegetated Wetlands for Eastern Washington

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 1-7 apply, and go to Question 8.

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

___The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

___At least 30% of the open water area is deeper than 3 m (10 ft)?

✓ NO – go to Step 2 **YES** – The wetland class is **Lake-fringe (lacustrine fringe)**

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

____The wetland is on a slope (*slope can be very gradual*),

____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

____The water leaves the wetland **without being impounded**?

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 <3ft diameter and less than a foot deep).*

✓ NO - go to Step 3 **YES** – The wetland class is **Slope**

3. Is the entire wetland unit in a valley or stream channel where it gets inundated by overbank flooding from that stream or river? In general, the flooding should occur at least once every ten years to answer "yes." *The wetland can contain depressions that are filled with water when the river is not flooding.*

✓ NO - go to Step 4 **YES** – The wetland class is **Riverine**

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

NO – go to Step 5 ✓ **YES** – The wetland class is **Depressional**

5. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. 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 1-7 APPLY TO DIFFERENT AREAS IN THE 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 your 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 class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes Within One Delineated Wetland Boundary	Class to Use for Rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine (riverine is within boundary of depression)	Depressional
Depressional + Lake-fringe	Depressional

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

Wetland name or number _____

D	**Depressional Wetlands** WATER QUALITY FUNCTIONS - Indicators that the wetland functions to improve water quality	**Points** (only 1 score per box)
D	**D 1.0 Does the wetland unit have the <u>potential</u> to improve water quality?**	***(see p. 38)***
D	D 1.1 Characteristics of surface water flows out of the wetland unit: 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 surface outlet points = 1 ✓	1
D	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions of soil types)* YES points = 3 NO points = 0 ✓	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) 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 Map of Cowardin vegetation classes	**Figure ___** 1
D	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 points = 3 Area seasonally ponded is ¼ - ½ total area of wetland points = 1 Area seasonally ponded is < ¼ total area of wetland points = 0 ✓ NOTE: *See text for indicators of seasonal and permanent inundation/flooding.* Map of Hydroperiods	**Figure ___** 0
D	**Total for D 1** *Add the points in the boxes above*	2
D	**D 2. Does the wetland unit have the <u>opportunity</u> to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ **YES** multiplier is **2** ✓ **NO** multiplier is **1**	multiplier 1
D	**<u>TOTAL</u> - Water Quality Functions** Multiply the score from D1 by the multiplier in D2 ***Record score on p. 1 of field form***	2

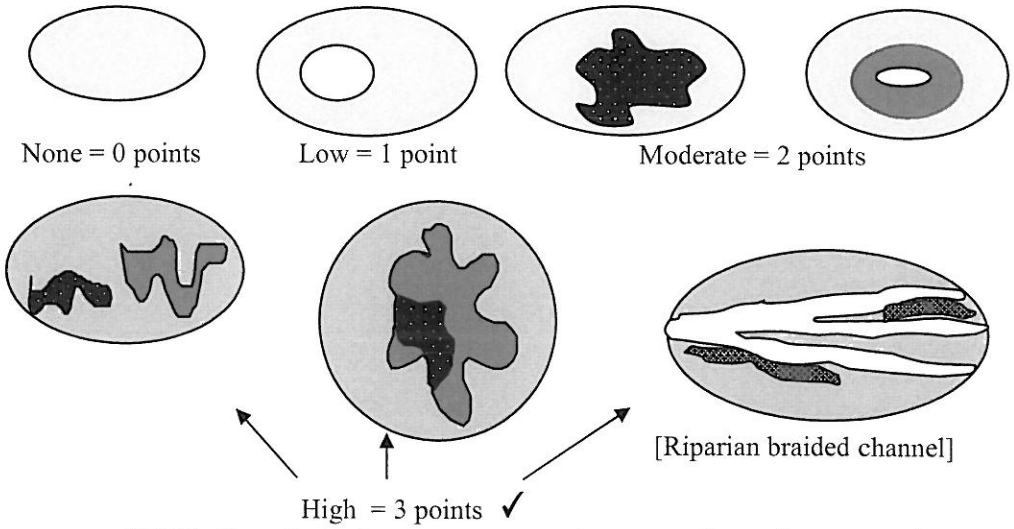
Wetland name or number _____

D	**Depressional Wetlands** HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
D	**D 3.0 Does the wetland unit have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 39)***
D	D 3.1 Characteristics of surface water flows out of the wetland unit: Wetland has no surface water outlet — points = 8 Wetland has an intermittently flowing outlet — points = 4 Wetland has a highly constricted permanently flowing outlet — points = 4 Wetland has a permanently flowing surface outlet — points = 0 ✓	0
D	D 3.2 Depth of storage during wet periods: *Estimate the height of ponding above the surface of the wetland (see text for description of measuring height). In wetlands with permanent ponding, the surface is the lowest elevation of "permanent" water)* Marks of ponding are at least 3 ft above the surface — points = 8 The wetland is a "headwater" wetland" *(see p. 39)* — points = 6 Marks are 2 ft to < 3 ft from surface — points = 6 Marks are 1 ft to < 2 ft from surface — points = 4 Marks are 6 in to < 1 ft from surface — points = 2 No marks above 6 in. or wetland has only saturated soils — points = 0 ✓	0
D	**Total for D 3** *Add the points in the boxes above*	0
D	**D 4.0 Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?** *Answer NO if the major source of water is groundwater, irrigation return flow, or water levels in the wetland are controlled by a reservoir.* Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. *Note which of the following conditions apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ **YES** multiplier is **2** ✓ **NO** multiplier is **1**	***(see p. 42)*** multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D3 by the multiplier in D4 ***Record score on p. 1 of field form***	**0**

Comments

Wetland name or number _____

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Categories of vegetation structure</u> ***(see p.62)*** *Check the vegetation classes (as defined by Cowardin) and heights of emergents present. Size threshold for each class or height category is ¼ acre or more than 10% of the area if unit is < 2.5 acres.* ____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 – 100cm) high are the highest layer with >30% cover __✓__Emergent plants > 40 in.(> 100cm) high are the highest layer with >30% cover __✓__Scrub/shrub (areas where shrubs have >30% cover) __✓__Forested (areas where trees have >30% cover) *Add the number of vegetation types that qualify. If you have:* 4-6 types points = 3 ✓ 3 types points = 2 2 types points = 1 1 type points = 0 NOTE: Other vegetation types are present, such as emergent plants over 40" and scrub/shrub, but these do not cover over 10% of the wetland. Map of Cowardin vegetation classes and areas with different heights of emergents	**Figure ___** 3
H 1.2. Is one of the vegetation types "aquatic bed?" ***(see p .64)*** YES = 1 point ✓ NO = 0 points	0
H 1.3. <u>Surface Water</u> ***(see p.65)*** H 1.3.1 Does the unit have areas of "open" water (without herbaceous or shrub plants) over at least ¼ acre or 10% of its area during the spring (March – early June) OR in early fall (August – end of September)? *Note: 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 unit have an intermittent or permanent stream within its boundaries, or along one side, over at least ¼ acre or 10% of its area, AND that has an unvegetated bottom (*answer yes only if H 1.3.1 is NO*)? YES = 3 points NO = 0 points Map showing areas of open water	**Figure ___** 3
H 1.4. <u>Richness of Plant Species</u> ***(see p. 66)*** Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasean Milfoil, reed canarygrass, purple loosestrife, Russian Olive, Phragmites ,Canadian Thistle, Yellow-flag Iris, and Salt Cedar (Tamarisk)* If you counted: > 9 species points = 2 4-9 species ✓ points = 1 # of species ____ < 4 species points = 0 points *List species below if you wish*	1

H 1.5. Interspersion of habitats ***(see p. 67)*** Decided from the diagrams below whether interspersion between categories of vegetation (described in H 1.1), or categories and un-vegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation categories or three vegetation categories and open water the rating is always "high". Use maps from H1.1 and H1.3	**Figure ___** 3
H 1.6. Special Habitat Features: ***(see p. 68)*** *Check the habitat features that are present in the wetland unit. The number of checks is the number of points you put into the next column.* ✓ Loose rocks larger than 4" **or** large, downed, woody debris (>4in. diameter) within the area of surface ponding or in stream. ✓ Cattails or bulrushes are present within the unit. ✓ Standing snags (diameter at the bottom > 4 inches) in the wetland unit or within 30 m (100ft) of the edge. ✓ Emergent or shrub vegetation in areas that are permanently inundated/ponded. *The presence of "yellow flag" Iris is a good indicator of vegetation in areas permanently 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)* *Maximum score possible = 6*	4
TOTAL Potential to provide habitat *Add the scores in the column above*	14

Comments

Wetland name or number _____

H 2.0 Does the wetland have the opportunity to provide habitat for many species?	
H 2.1 Buffers ***(see p. 71)*** *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed." Relatively undisturbed also means no grazing, no landscaping, no daily human use, and no structures or paving within undisturbed part of buffer.* — 330ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference **Points = 5** — 330 ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 170ft (50 m) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 330ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** ✓ 170ft (50 m) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 80ft (25 m) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 170ft (50m) of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** — Vegetated buffers are <6.6ft wide (2m) for more than 95% of the circumference (e.g . tilled fields, paving, basalt bedrock extend to edge of wetland). **Points = 0** — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	**Figure ___** 3
H 2.2 Wet Corridors ***(see p. 72)*** H 2.2.1 Is the wetland unit part of a relatively undisturbed and unbroken, > 30 ft wide, vegetated corridor at least ¼ mile long with surface water or flowing water throughout most of the year (> 9 months/yr)? (*dams, heavily used gravel roads, paved roads, fields tilled to edge of stream, or pasture to edge of stream are considered breaks in the corridor*). YES = 4 points (go to H 2.3) ✓ NO = go to H 2.2.2 H 2.2.2 Is the unit part of a relatively undisturbed and unbroken, > 30 ft wide, vegetated corridor, at least ¼ mile long with water flowing seasonally, **OR** a lake-fringe wetland without a "wet" corridor, **OR** a riverine wetland without a surface channel connecting to the stream? YES = 2 points (go to H 2.3) ✓ NO go to H 2.2.3 H 2.2.3 Is the wetland within a 1/2 mile of any permanent stream, seasonal stream, or lake (*do not include man-made ditches*)? ✓ YES = 1 point NO = 0 points	1

Wetland name or number _____

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)*** Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections to the habitats can be disturbed.* ____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____**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 p. 152*). ____ **Eastside Steppe:** Non-forested vegetation type dominated by broadleaf herbaceous flora ((*full description of herbaceous species found here are in WDFW PHS report p. 153*). ____**Old-growth/Mature forests (east of Cascade crest):** (*full descriptions in WDFW PHS report p. 157*). Old-growth: Stands are > 150 yrs in age; may be variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. Mature: Stands 80 – 160 yrs old. Decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. ____**Oregon white Oak:** Woodlands 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*). ____ **Juniper Savannah**: All juniper woodlands (*SE part of state only; check map*) ____ **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). ✓ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____Inland Dunes This placeholder is for a new priority habitat that will capture areas known as Inland Dunes. A definition will be developed later in Fall 2008. *(check WDFW web site)* ____**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 7.6 m (25 ft) high and occurring below 5000 ft. ____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), 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 > 30 cm (12 in) in eastern Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **2 or more** Priority Habitats = **4 points** If wetland has **1** Priority Habitat = **2 points** ✓ No Priority habitats = **0 points** *Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)*	2

Wetland name or number _____

H 2.4 Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 76)*** — The wetland unit is in an area where annual rainfall is less than 12 inches, and its water regime is not influenced by irrigation practices, dams, or water control structures. (*Generally, this means outside boundaries of reclamation areas, irrigation district, or reservoirs*) **points = 5** — There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing in the connection or an open water connection along a lake shore without heavy boat traffic are OK, but connections should NOT be bisected by paved roads, fill, fields, heavy boat traffic or other development) **points = 5** ✓ There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed? **points = 2** — There is at least 1 wetland within ½ mile. **points = 1** — Does not meet any of the four criteria above **points = 0**	2
H 2. TOTAL Score - opportunity for providing habitat *Add the scores in the column above*	8
H 3.0 Does the wetland unit have indicators that its ability to provide habitat is reduced?	
H 3.1 Indicator of reduced habitat functions ***(see p. 75)*** Do the areas of open water in the wetland unit have a resident population of carp (see text for indicators of the presence of carp)? *(NOTE: This question does not apply to reservoirs with water levels controlled by dams, such as the reservoirs on the Columbia and Snake Rivers)* YES = **- 5 points** ✓ NO = 0 points	*Points will be subtracted* 0
Total Score for Habitat Functions – *add the points for H 1, H 2, and H 3 and record the result on p. 1*	**22**

Comments

Wetland name or number _____

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland unit meets the attributes described below and circle the appropriate Category. NOTE: A wetland may meet the criteria for more than one set of special characteristics. Record all those that apply. NOTE: All units should also be characterized based on their functions.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	Category
SC 1.0 Vernal pools ***(see p. 79)*** Is the wetland unit **less than 4000 ft^2**, and does it meet at least **two** of the following criteria? — Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input — Wetland plants are typically present only in the spring; the summer vegetation is typically upland annuals. *NOTE: If you find perennial, "obligate", wetland plants the wetland is probably NOT a vernal pool* — The soil in the wetland are shallow (<1ft deep (30 cm)) and is underlain by an impermeable layer such as basalt or clay. — Surface water is present for less than 120 days during the "wet" season. YES = Go to SC 1.1 ✓ NO - *not a vernal pool* SC 1.1 Is the vernal pool relatively undisturbed in February and March? YES = Go to SC 1.2 NO – *not a vernal pool with special characteristics*	
SC 1.2 Is the vernal pool in an area where there are at least 3 separate aquatic resources within 0.5 miles (other wetlands, rivers, lakes etc.)? YES = Category II NO = Category III	**Cat. II** **Cat. III**
SC 2.0 Alkali wetlands ***(see p. 81)*** Does the wetland unit meets **one** of the following two criteria? — The wetland has a conductivity > 3.0 mS/cm. — The wetland has a conductivity between 2.0 - 3.0 mS, and more than 50% of the plant cover in the wetland can be classified as "alkali" species (see Table 2 for list of plants found in alkali systems). — If the wetland is dry at the time of your field visit, the central part of the area is covered with a layer of salt. **OR** does the wetland unit meets two of the following three sub-criteria? — Salt encrustations around more than 80% of the edge of the wetland — More than ¾ of the plant cover consists of species listed on Table 2 — A pH above 9.0. All alkali wetlands have a high pH, but please note that some freshwater wetlands may also have a high pH. Thus, pH alone is not a good indicator of alkali wetlands. YES = Category I ✓ NO – *not an alkali wetland*	**Cat. I**

SC 3.0 Natural Heritage Wetlands ***(see p. 81)*** Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 3.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ✓ or accessed from WNHP/DNR database ✓ YES____ – contact WNHP/DNR (see p. 79) and go to SC 3.2 NO ✓ SC 3.2 Has DNR identified the wetland unit as a high quality undisturbed wetland or as or as a site with state threatened, endangered, or sensitive plant species? YES = Category I NO –*not a natural heritage wetland*	**Cat. I**
SC 4.0 Bogs ***(see p. 82)*** Does the wetland unit **(or any part of the wetland unit)** meet both the criteria for soils and vegetation in bogs. *Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.* SC 4.1. Does the wetland unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to SC 4.3 ✓ No - go to SC 4.2 SC 4.2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond?? Yes - go to SC 4.3 ✓ No - *Is not a bog for rating* SC 4.3. Does the wetland unit have more than 70% cover of mosses at ground level in any area within its boundaries, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Category I bog No - go to Q. 4.4 *NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.*	**Cat. I**
SC 4.4. Is the unit, or any part of it, forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* Yes – Category I bog NO	**Cat. I**

SC 5.0 Forested Wetlands ***(see p. 85)*** Does the wetland unit have an area of forest (*you should have identified a forested class, if present, in question H 1.1*) rooted within its boundary that meet **at least one** of the following three criteria? — The wetland is within the "100 year" floodplain of a river or stream — aspen (*Populus tremuloides*) are a dominant or co-dominant of the "woody" vegetation. (*Dominants means it represents at least 50% of the cover of woody species, co-dominant means it represents at least 20% of the total cover of woody species*) — There is at least ¼ acre of trees (even in wetlands smaller than 2.5 acres) that are "mature" or "old-growth" according to the definitions for these priority habitats developed by WDFW *(see p. 83)* YES = go to SC 5.1 ✓ NO –*not a forested wetland with special characteristics*	
SC 5.1 Does the wetland unit have a forest canopy where more than 50% of the tree species (by cover) are slow growing native trees Slow growing trees are: western red cedar (*Thuja plicata*), Alaska yellow cedar (*Chamaecyparis nootkatensis*), pine spp. mostly "white" pine (*Pinus monticola*), western hemlock (*Tsuga heterophylla*), Englemann spruce (*Picea engelmannii*). YES = Category I ✓ NO = go to SC 5.2	**Cat. I**
SC 5.2 Does the unit have areas where aspen (*Populus tremuloides*) are a dominant or co-dominant species? YES = Category I ✓ NO = go to SC 5.3	**Cat. I**
SC 5.3 Does the wetland unit have areas with a forest canopy where more than 50% of the tree species (by cover) are fast growing species. Fast growing species are: Alders – red (*Alnus rubra*), thin-leaf (*A. tenuifolia*) Cottonwoods – narrow-leaf (*Populus angustifolia*), black (*P. balsamifera*) Willows- peach-leaf (*Salix amygdaloides*), Sitka (*S. sitchensis*), Pacific (*S. lasiandra*), Aspen - (*Populus tremuloides*), Water Birch (*Betula occidentalis*) YES = Category II NO = go to SC 5.5	**Cat. II**
SC 5.5 Is the forested component of the wetland within the "100 year floodplain" of a river or stream? YES = Category II	**Cat. II**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories.* If you answered NO for all types enter "Not Applicable" on p.1	**N/A**