WETLAND DELINEATION AND IMPACTS REPORT

Beebe Springs Natural Area – Phase 2 Chelan County, Washington

Prepared for

Washington Department of Fish and Wildlife

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1.0 INTRODUCTION

The Beebe Springs Phase 2 project would restore vegetation communities, create fish and wildlife habitat, and provide educational and recreation opportunities to the public. Phase 1 of the project removed a former fruit orchard from the property and created additional stream habitat. Phase 2 would restore the floodplain and upslope habitats by removing invasive species and creating off-channel fish habitat. It would also integrate walking trails, viewing platforms, and interpretive displays across the site for use by the general public.

URS conducted a wetland delineation of the Phase 2 area on March 6, 2007 to determine the presence and extent of wetlands on the project site. URS Corporation confirmed the presence of two wetlands in the Phase 2 area. The first is an extension of a wetland delineated during Phase 1 of the project and represents Lake Entiat's shoreline wetlands. The second is a lake-fringe wetland that lies on the floodplain between the orchard toe of slope and the dirt driveway paralleling the shoreline. This report documents the delineated wetlands and characterizes the vegetation communities, soils, and hydrologic regimes occurring on the property that were used to distinguish wetlands from uplands.

2.0 METHODS

2.1 WETLAND DELINEATION

Documents reviewed to aid in the identification and determination of wetlands in the Phase 2 vicinity include the:

- Soil Survey for Chelan County Area, Washington (NRCS 2006);
- National Wetlands Inventory Online Mapping Tool (USFWS 2007);
- Project reports (WDFW 2007); and
- Photographs (WDFW 2007).

Additional supporting evidence was provided by Washington Department of Fish and Wildlife (WDFW) staff observations of standing water in the project area during previous high water periods.

Wetland determination and delineations were made on site by wetland biologists using the:

- 1987 U.S. Army Corps of Engineers (Corps) Wetlands Delineation Manual;
- 1997 Washington State Department of Ecology (Ecology) Wetland Identification and Delineation Manual; and
- 2006 Corps Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region.

The 1997 Ecology methodology was developed to be consistent with the 1987 Corps manual. Delineated and surveyed wetland boundaries are subject to agency verification and approval.

For regulatory purposes, wetlands are defined as follows (Corps 1987):

Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

According to the two manuals, the following three characteristics usually must be present for an area to be identified as a wetland: (1) wetland hydrology, (2) hydric soil, and (3) hydrophytic vegetation. Wetland hydrology includes seasonal, periodic, or permanent inundation or soil saturation that creates anaerobic conditions in the soil for a portion of the growing season sufficient for wetland soil and vegetation to be maintained. Hydric soils are saturated, flooded, or ponded long enough during the growing season to become deoxygenated in the upper soil horizon. Hydrophytic vegetation consists of those plant species growing in water, in soil, or on a substrate that at least periodically lacks oxygen.

The growing season is technically defined as the period when soil temperatures 19.7 inches below the ground surface (bgs) are greater than 5°C (41°F), according to the 1987 Corps *Wetlands Delineation Manual* and regulatory guidance (Corps 1992). However, Corps regulatory guidance letters and the Ecology manual state that the final determination of growing season should be based on careful observations of evidence that active growth is occurring. This evidence can include new or recent growth such as flowers, new shoots, new leaves, or swollen buds on plants. It was determined that the site visit did occur just after the beginning of growing season as evidenced by sprouting grasses and buds opening on shrubs.

A total of eleven sample plots were used to investigate the Phase 2 project area. The sample plots are located in places that adequately represent the variation in vegetation, soils, and hydrologic regime across the site. The presence or absence of hydrophytic vegetation, hydric soil, and wetland hydrology indicators were documented for each sample plot as a means of justifying the delineated wetland boundaries. Wetland delineation data forms can be found in Appendix A.

2.1.1 Wetland Hydrology

To determine whether a vegetation community has wetland hydrology, an area is examined for inundation, soil saturation, shallow groundwater tables, or other hydrologic indicators. An area in which soils are saturated to the surface for at least 5 to 12 percent of the growing season meets the criterion for wetland hydrology. Seasonal changes in water levels and the effect of recent precipitation events must be considered when evaluating an area's hydrology. Wetland hydrology can also be inferred from the presence of any of the following indicators: watermarks on vegetation, drift lines, sediment deposits, water-stained leaves, surface-scoured areas, wetland drainage patterns, algae growth, and oxidized root channels.

2.1.2 Hydric Soil

Soil observations were made in wetlands and adjacent upland areas by digging 1.5-foot-deep soil profiles in each sample plot. Soil color and other characteristics used to indicate hydric soils were documented using the Munsell Soil Color Chart (GretagMacbeth 2000). The Natural Resources Conservation Service (NRCS) soil survey provided soil taxonomy, map unit name (soil series), and drainage class data. Soil in which any of the following indicators is present meets the criteria for hydric soil:

- Gleyed soil (gray colors). Gleyed soils develop when mineral soil is saturated or inundated for periods of time sufficient to result in anaerobic (no oxygen) conditions. Anaerobic conditions cause elements common in soil, such as iron and manganese, to exist in reduced forms that are usually bluish, greenish, or grayish in color. Soil colors are determined using a Munsell soil color chart (GretagMacbeth 2000), which has separate pages for gley-colored soils.
- Low chroma matrix. A low chroma matrix develops when mineral soil is saturated or inundated for substantial periods of time during the growing season (but not long enough to produce gleyed soil) to result in anaerobic or hypoxic (low oxygen) conditions. A soil matrix is the portion of a given soil layer (usually more than 50 percent by volume) that has the predominant color. The Munsell system uses three dimensions to describe soil color: hue, value, and chroma. The Munsell soil color chart uses abbreviations to describe the colors, for example, 10YR 3/2. In the abbreviation, the first number and letters indicate the hue (10YR), the next number indicates the value (3), and the last number indicates chroma (2). A chroma of 1 or 2 is considered low. Soils with a matrix chroma of 2 are usually considered hydric when mottles are present. Mottles are rust-colored spots or blotches in the soil formed by the oxidation of iron compounds via fluctuating water levels. Mottles found in soil with a matrix chroma of 2 (or less) often indicate that a soil is hydric.
- **High organic content**. Soil retains high levels of organic matter when saturation prevents decomposition over long periods, thus allowing organic debris to accumulate. Organic content is considered high if the soil is composed of more than 20 to 30 percent (threshold differs depending upon other soil characteristics) organic material by weight in a layer at least 8 inches thick located in the upper 32 inches of the soil profile.
- Soils appearing on the hydric soils list. A list of hydric soils has been compiled by the U.S. Department of Agriculture's National Technical Committee for Hydric Soils (NRCS 2001). Listed soils have reducing conditions for a significant portion of the growing season in a major portion of the root zone and are frequently saturated within 12 inches of the soil surface.
- Other hydric indicators. Other positive indicators of hydric soil include sulfide or "rotten egg" odor, aquic or peraquic moisture regimes (reducing soil moisture regimes due to groundwater at or near the soil surface), and the presence of iron or manganese concretions.

2.1.3 Hydrophytic Vegetation

The dominant plant species in each vegetation community were identified within each sample plot. Vegetation communities are defined here as a contiguous assortment of plants in a given area sharing similar environmental conditions. Dominant plants are those species that comprise at least 20 percent areal cover within a sample plot. The sample plots are circular and have a 30-foot radius for trees and shrubs and a 5-foot radius for herbaceous plants. Plots were situated so that they best represent the vegetation present within each community.

The hydrophytic indicator status for each dominant species, as designated by the U.S. Fish and Wildlife Service for Region 9 (USFWS 1993), was used to determine whether the vegetation in each community is hydrophytic. To meet the hydrophytic vegetation criteria, more than 50 percent of the dominant species must have an indicator status of obligate, facultative wetland, and/or facultative. Indicator status categories are defined in Table 1. The facultative status categories are often modified using minus (-) or plus (+) symbols. For example, FAC+ species are considered to have a somewhat greater estimated probability of occurring in wetlands than FAC species, whereas FAC- species are considered to have a somewhat lesser estimated probability of occurring in wetlands than FAC species.

Table 1. Plant Species Wetland Indicator Categories

Indicator Category	Occurrence	Probability in Wetlands (estimated)
Obligate (OBL)	Occurs almost always in wetlands under natural conditions	>99%
Facultative Wetland (FACW)	Usually occurs in wetlands, but occasionally found in non-wetlands	67-99%
Facultative (FAC)	Equally likely to occur in wetlands and non-wetlands	34–66%
Facultative Upland (FACU)	Usually occurs in non-wetlands, but occasionally found in wetlands	1–33%
Upland (UPL)	Occurs almost always under natural conditions in non-wetlands in this region but may occur in wetlands in another region	<1%

Source: Corps 1987

2.2 WETLAND CLASSIFICATION

2.2.1 Cowardin Classification

Wetlands are classified according to the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). Under the Cowardin classification scheme, wetlands and deepwater habitats are grouped into systems based on shared hydrologic factors. These systems are marine, estuarine, riverine, lacustrine, and palustrine. Palustrine systems are present in the Phase 2 project area.

Palustrine Systems include all wetlands having less than 0.5% salinity and containing persistent vegetation. Vegetation may include trees, shrubs, erect (emergent) or floating (aquatic bed) herbaceous plants, mosses, and/or lichens. Wetlands included in the palustrine system are those

commonly referred to as marshes, swamps, bogs, fens, prairies, seeps, and intermittent ponds. A palustrine system can exist directly adjacent to or within the lacustrine, riverine, or estuarine systems.

Palustrine wetlands are divided into classes by the dominant vegetation. Palustrine forested (PFO) wetlands or forested wetland communities are dominated by trees or arborescent shrubs greater than 20 feet tall having greater than 30 percent cover. Palustrine scrub-shrub (PSS) wetlands or scrub-shrub wetland communities are dominated by woody shrubs less than 20 feet tall with at least 30 percent cover. Palustrine emergent (PEM) wetlands or emergent wetland communities are dominated by nonwoody, rooted vascular plants having at least 30 percent cover.

The U. S. Fish and Wildlife Service National Wetlands Inventory (NWI) provides information on the characteristics, extent, and status of the nation's wetlands and deepwater habitats. The NWI collects data from aerial photography to produce maps that correspond to the USGS 7.5 or 15 minute topographic quadrangles. NWI quadrangles use the Cowardin classification system to characterize wetland features on each map.

2.2.2 HGM Classification

Wetlands were also classified according to the Hydrogeomorphic (HGM) classification. The HGM classification groups wetlands into categories based on the geomorphic and hydrologic characteristics that control many wetland functions. The modified version of this classification system that is found in the *Washington State Wetland Rating System for Eastern Washington* (Ecology 2004) was used for HGM classification. The HGM class found in the project area is lake-fringe.

Lake-fringe wetlands occur in or adjacent to bodies of water greater than 20 acres in size with at least 30% of the open water areas are more than 10 feet deep. The HGM definition of lake-fringe, which accounts for geomorphology, differs from the Cowardin definition of lacustrine that uses persistence of vegetation. The hydrologic characteristics of the two systems also provide subtle differences in definition.

2.3 WETLAND RATINGS AND BUFFERS

Wetlands were rated using Ecology's *Revised Wetlands Rating System for Eastern Washington* (Ecology 2004). Chelan County Code also uses Ecology's rating system (Chelan County 2007). The Eastern Washington Wetland Rating Data Forms are provided in Appendix B.

2.3.1 Department of Ecology Wetland Rating System

Category I are those wetlands of exceptional value in terms of protecting water quality, storing flood and storm water, and/or providing habitat for wildlife as indicated by a rating system score of 70 points or more on the Ecology rating forms. These wetlands are communities of infrequent occurrence that often provide documented habitat for sensitive, threatened, or endangered species, and/or have other attributes that are very difficult or impossible to replace if altered.

Category II wetlands are those wetlands that are difficult, though not impossible, to replace, generally have little to no disturbance, and provide high levels of some functions. The primary criteria for category II wetlands are that they score 51–69 out of 100 points on the rating questions related to functions. Category II wetlands also include estuarine wetlands less than 1 acre, or greater than 1 acre that are disturbed, and interdunal wetlands greater than 1 acre. Although category II wetlands occur more commonly than category I wetlands, they are deemed to warrant a relatively high level of protection.

Category III wetlands generally provide a moderate level of functions, have been disturbed in some way, and are often less diverse or more isolated from other natural resources. The primary criteria for category III wetlands are they score 30–50 out of 100 points as defined in Ecology's *Wetlands Rating System for Eastern Washington*. Interdunal wetlands between 0.1 and 1 acre in size are also category III regardless of their score. Category III wetlands are regulated wetlands that do not contain features or levels outlined in Categories I, II, or IV. They occur more frequently, are less difficult to replace, and need a moderate level of protection compared to higher rated wetlands.

Category IV wetlands have the lowest levels of functions (less than 30 points on the rating questions relating to functions). They do not meet the criteria for Category I, II or III wetlands. These are wetlands that should be replaceable and, in some cases, can be improved from a functions standpoint. These wetlands may provide important functions and values and should be protected to some degree.

2.3.2 Chelan County Wetland Buffers

Chelan County enforces wetland buffers (Chelan County 2005) to provide additional protections to a wetland's physical and biological function. Buffers are calculated based on the wetland's categorical rating and the intensity of adjacent land uses (Table 2).

Table 2. Chelan County Wetland Buffer Widths for High and Low Intensity Land Uses.

Wetland Category	High Intensity (feet)	Low Intensity (feet)
Category 1	300	200
Category 2	200	100
Category 3	100	50
Category 4	50	25

Source: Chelan County Code Section 11.80.060

Guidance issued jointly by the Corps and Ecology also addresses buffers needed to protect wetland functions (Ecology et al. 2006). This guidance provides buffer widths that vary by wetland type and rating and the intensity of adjacent land uses. Protecting wildlife habitat functions of wetlands generally requires larger buffers than protecting the water-quality functions of wetlands.

2.4 WETLAND FUNCTIONS ASSESSMENT

Wetland functions were analyzed using methodology developed by Ecology and published in the *Revised Wetlands Rating System for Eastern Washington* (Ecology 2004). These functions are assessed in three broad categories: water quality improvement, hydrologic function, and habitat quality. Both the potential and opportunity to provide each function is analyzed. The potential to perform a function is based on the physical, biological, and chemical characteristics within the wetland itself. The opportunity is to what degree the wetland's position in the landscape will allow it to perform a specific function.

2.5 WETLAND MAPPING

The boundary between wetland and upland areas was marked in the field with pink flagging. Sample plots were also marked with pink flagging. Flag locations were collected using a mapping-grade Trimble GeoXT global positioning system and post-processed to obtain submeter accuracy of the regulatory wetland edge.

2.6 ORDINARY HIGH WATER MARK

The Ordinary High Water Mark (OHWM) on Lake Entiat (Columbia River) was established by locating where the fluctuations of water in the reservoir have created a clear, natural line on the bank indicated by changes in the character of the soil/substrate and destruction of terrestrial vegetation. In the case of Lake Entiat in the project area, there is a clearly defined embankment of 1 to 2 feet in height where wave action and current have removed all terrestrial vegetation. The landward side is vegetated with terrestrial or wetland vegetation, while the stream channel is composed of exposed mineral substrate (primarily gravel, sand and cobble). The top of this embankment is approximately 1 to 3 feet landward from this line. The top of the embankment was the elevation level at which point water begins to leave the channel and move into the floodplain of the Lake (Rosgen, 1996). This was surveyed as the OHWM.

During a February 7, 2007 site visit, a single point along this line was flagged by Tim Erkel (U.S. Corps of Engineers, Eastern Washington Regional Office). A URS biologist made a visit to the Beebe Springs Natural Area Development project area on February 9, 2007, to record OHWM elevations along the shoreline of Lake Entiat (Columbia River). After locating the flag, a Trimble GeoExplorer Geo XT GPS unit was used to record the marked location and similar locations along the length of the shoreline of Lake Entiat in the project area. The data were post-processed with Trimble TerraSync software to obtain sub-meter points for each location. The OHWM locations were then added to CADD coverage of the project area and elevations were derived from surveyed topographic lines (2 foot interval lines). Based on the surveyed locations, the line for OHWM falls between an elevation of 708 and 709 feet (1927 Datum) and this elevation line was defined as the OHWM for the project area.

3.0 RESULTS

URS conducted a pre-field review of the NWI, the local NRCS soil survey, and topographic maps. Additional information was gathered from discussion and photos provided by WDFW staff. The NWI indicates that a series of palustrine scrub-shrub and emergent wetlands occur along the river right shoreline of the Columbia River in the project area and the greater vicinity (Figure 2). A review of the Chelan County hydric soils list determined that the four soil types mapped in the project area are not hydric soils (NRCS 2001). Photographs provided by WDFW documents that water ponds in depressions on the floodplain terrace immediately upslope of the Columbia River shoreline.

A field investigation and wetland delineation was performed on March 6, 2007. The presence of two wetlands was confirmed during the field visit.

3.1 SITE SOILS

According to the USDA Natural Resources Conservation Service (NRCS) *Soil Survey of Chelan County Area, Washington (Parts of Chelan and Kittitas Counties)*, four soil types are mapped within the project area (Figure 3). They include Chelan gravelly sandy loam, 0 to 3 and 3 to 8 percent slopes (C1A and ClB), Pogue gravelly fine sandy loam, 3 to 8 percent slopes (PrB), and Supplee very fine sandy loam, 3 to 8 percent slopes (SuB). Although all four soil types are present, Chelan soils represent the majority of the site.

The Chelan series is comprised of well-drained, moderately coarse textured soils that formed in pumice, volcanic ash, and loess over non-sorted gravelly, cobbly, or bouldery deposits of ablation glacial till. The surface soil layer is gray gravelly sandy loam about 18-inches thick, underlain by dark grayish brown gravelly sandy loam 17-inches thick, underlain by pale brown very gravelly sandy loam that extends to a depth of 60 inches. Runoff is very slow for soils ClA and ClB, and the hazard of water erosion is none to slight.

The Pogue series is comprised of somewhat excessively drained, moderately coarse textured soils that formed in glacial outwash derived mainly from quartz-bearing rocks. The surface soil layer is grayish brown fine sandy loam, gravelly or very stony in places, 6-inches thick, underlain by brown fine sandy loam 11-inches thick, underlain by brown gravelly fine sandy loam 13-inches thick. Outwash sand and gravel underlie these soils at a depth of 30 inches. Runoff is slow for soil PrB, and the hazards of soil blowing and water erosion are slight. If this soil is irrigated, runoff is medium and the hazard of water erosion is moderate.

The Supplee series is comprised of well-drained, medium-textured soils that formed in pumice, volcanic ash, and deposits of loess over gravelly and cobbly glacial outwash. The surface soil layer is grayish brown very fine sandy loam 6 inches thick, underlain by brown gravelly fine sandy loam and very gravelly sandy loam 25 inches thick, underlain by glacial outwash material of sand, gravel, and cobblestones at a depth of 31 inches, which extends to a depth of 60 inches and more. Runoff is slow for soil SuB, and the hazard of water erosion is slight. If this soil is irrigated, runoff is medium and the hazard of erosion is moderate.

3.2 SITE HYDROLOGY

The Beebe Springs project area contains two major sources of water – Beebe Springs Creek and the Columbia River/Lake Entiat. Beebe Springs Creek flows through the site rapidly along a moderate gradient and does not provide much hydrologic input to the project area. Lake Entiat is a reservoir pool created by the Rocky Reach Dam. The project area is located in the upper most third of the reservoir where the pool levels are more heavily influenced by the highly fluctuating flows being released from the nearby upstream Wells Dam. Therefore, the hydrology along this section of the river/reservoir acts like a river and a lake simultaneously.

The two wetlands in the Phase 2 project area sit on the river's floodplain. Their hydrology is associated with the daily reservoir elevations and/or seasonal overbank flooding during upstream spring runoff. The wetlands' deeper soils, greater than two feet below the ground surface, are directly influenced by the normal average daily river/pool elevation controlled by hydroelectric generation demand by Wells Dam and Rocky Reach Dam.

The surface soils, down to two feet deep, are more directly influenced by seasonal higher than normal river flows/pool elevations that result in overbank flooding. These flood occurrences correspond to seasonal snowmelt and the instantaneous volume of snowmelt. According to WDFW staff, this flooding occurs in middle and late spring, with multiple events possible that correspond with snowmelt timing in the North Cascades and the Canadian Rockies. During these events, flood waters are detained in shallow depressions on the terrace upslope and behind the ordinary high water line. Water captured in these depressions provides temporary inundation in the wetlands and infiltrates through the porous sandy loam soils to provide temporary to seasonally saturated soils for wetland conditions to develop.

3.3 WETLANDS

Two wetlands were identified in the Phase 2 project area. Wetland A comprises the Columbia River (Lake Entiat) shoreline and was partially delineated during Phase 1 of the project. Wetland A was further delineated between the Phase 2 project area boundaries. Wetland B sits in a shallow depression on the floodplain terrace upslope of Wetland A.

3.3.1 Wetland A

The segment of Wetland A within the Phase 2 area is a 0.38-acre wetland that represents the vegetated shoreline of Lake Entiat (Figure 4a and 4b). It is classified under Cowardin as palustrine scrub-shrub and as a lake-fringe wetland using the HGM system. The Wetland A boundary was defined on the waterward side by the edge of persistent vegetation and on the upslope side by the ordinary high water line delineated by URS on February 9, 2007.

Since this wetland is immediately adjacent to Lake Entiat, its hydrology is directly controlled by both the river/reservoir's daily and seasonal water elevation. This would be described as regularly saturated or flooded by Cowardin (Cowardin 1979). Hydrology may range from dry to flooded depending on the time of day, time of year, and hydroelectric generation demand by both Wells Dam and Rocky Reach Dam.

Soils closely match the Chelan soils series described in Section 3.1 *Site Soils*. They consist of dark grayish brown (10YR 4/2) to very dark grayish brown (10YR3/2) sandy loams containing a very high percentage of gravels and cobbles throughout the surface soil profile. The wetland soils were distinguished from upland soils by the difference in size, abundance, and distinction of redoximorphic feature versus matrix color. Upland soils typically had redoximorphic features that were too fine, faint, and infrequent to distinguish the color. Wetland soils had fine to medium, distinct strong brown (7.5YR 4/6) redoximorphic features found commonly throughout the soil.

The vegetation in Wetland A is dominated by a scrub-shrub overstory and an herbaceous emergent layer. Dominant plant species include red alder (*Alnus rubra*/FAC), coyote willow (*Salix exigua*/OBL), red-osier dogwood (*Cornus sericea*/FACW), Himalayan blackberry (*Rubus armeniacus*/FACU), and reed canarygrass (*Phalaris arundinacea*/FACW). Also present are bentgrasses (*Agrostis* sp.) and horsetails (*Equisetum arvense*/FAC and *E. laevigatum*/FACW), and other herbaceous species that were not identifiable at the time of the field visit in March 2007.

According to the state and county rating methods, Wetland A is rated as a Category III wetland having a moderate potential and opportunity to provide habitat and water quality functions. Its position on a reservoir significantly reduces its opportunity to provide hydrologic functions. The wetland rating form is available in Appendix B.

Federal, state, and local regulations and guidance require buffers be placed around wetlands to protect and enhance the biotic, physical, and chemical functions that wetlands perform. Chelan County requires that a 50-foot buffer be located around Category III wetlands situated in low intensity developed areas. The Corps and Ecology joint guidance requires a 75-foot boundary around wetland A.

3.3.2 Wetland B

Wetland B is a 0.52-acre wetland positioned on the river's floodplain terrace (Figure 4a). It is separated from Wetland A by a small berm at its south end and an old orchard road and a small berm at its north end. It is classified under Cowardin as palustrine scrub-shrub/emergent and as a lake-fringe wetland using the HGM system. Wetland B's boundary is defined by changes in the presence, extent, and size of redoximorphic features, topographic changes, and subtle changes in vegetation composition.

Wetland B has a temporarily flooded hydrologic regime that is directly or indirectly controlled by the river flows and reservoir water elevation. Though the subsoils greater than two feet below the surface may have a groundwater influence from the daily average reservoir elevations, the surface soils likely maintain a distinctly different hydrologic regime. The surface soils are positioned above the reasonable distance that capillary rise may occur, typically about 12 inches. Surface soil hydrology may range from dry to flooded depending on the seasonal conditions described in Section 3.2 *Site Hydrology*. Inundation has been observed in this wetland by WDFW and other project staff at least periodically from April through June during most years.

Soils closely match the Chelan soils series described in Section 3.1 *Site Soils*. They consist of dark grayish brown (2.5YR 4/2) to very dark grayish brown (10YR 3/2) very fine sandy loams to

sandy clay loams containing a very high percentage of gravels and cobbles below about seven inches in the soil profile. The wetland soils were distinguished from upland soils by the difference in size, abundance, and distinction of redoximorphic feature versus matrix color. Upland soils typically lacked or had redoximorphic features that were too fine, faint, and infrequent to color. Wetland soils had fine to medium, distinct strong brown (7.5YR 4.6) redoximorphic features found commonly throughout the soil.

The vegetation in Wetland B is dominated by a scrub-shrub community in the south half and an herbaceous emergent community in the north half. Dominant plant species include coyote willow, Himalayan blackberry, and English plantain (*Plantago lanceolata*/FAC) in the scrub-shrub community. The emergent community is dominated by English plantain, quackgrass (*Elytrigia repens*/FAC) and horsetails. Also present are red-osier dogwood, reed canarygrass and other herbaceous species that were unidentifiable at the time of the delineation.

According to the state and county rating methods, Wetland B is rated as a Category III wetland having a moderate potential and opportunity to provide habitat and water quality functions. Its position on a reservoir significantly reduces its opportunity to provide hydrology functions. The wetland rating form is available in Appendix B.

State and local regulations require buffers be placed around wetlands to protect and enhance the biotic, physical, and chemical functions that wetlands perform. Chelan County requires that a 50 foot buffer be located around Category III wetlands situated in low intensity developed areas. The Corps and Ecology joint guidance requires a 40-foot boundary around wetland A.

4.0 PROJECT IMPACTS

The proposed project would grade and recontour about 26 acres of upland, wetland, and shoreline areas to enhance the existing site conditions and create off channel fish habitat along the Columbia River. About 0.08 acre of Wetland A and about 0.33 acre of Wetland B would be excavated to create new wetland and open water habitat (Figures 5a and 5b). Restored vegetation along the new shoreline will be a combination of native trees, shrubs, and herbaceous vegetation.

If the Wetland B hydrology is primarily maintained by the overbank flooding events with the water being perched and retained, then the excavation of one end of wetland to a lower elevation may cause the water to drain more quickly than under current conditions. If the water does not remain long enough to sustain hydrophytic vegetation, then the upper part of the wetland would cease to be a wetland. The lower part of the wetland that is excavated will be converted into open water habitat (an extension of the Lake) with a narrow fringe of lake-fringe wetland.

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APPENDIX A WETLAND DELINEATION DATA FORMS

URS Routine On-site Wetlands Determination

URS Seattle Office 1501 4" Ave. Suite 1400, Seattle, Washington 98102 Tele: 206.438,2700

		MSE Z		Fieldwork Date		1722 2011 15 15 15	
	ELAN, WA HWY	44		County: Investigator(s):	CHELAN	State:	WA
Applicant/Owner: W Transect/Plot: \$9-1	Plot Location: /20	FT UP	SLOPE of OF		OF CURVE W DRIN	E. 188	
Normal circumstances exis		No No	T ar or	TOUT MENTH	AL CANAL IN DRIA	EVANT	-
Significantly disturbed (aty		☐ No	X				
s this a potential Problem		☐ No	X				
			Vegetat	ion			
Normal plot cizo/chana? to	radius - trees & shrubs = 3	0' harbs - 5'		es 🛛 No 🗆			7.1
Spec		Ind.	% Raw		ecies	Ind.	% Flaw
Spec	,103	Status	Cover	Op	Colos	Status	Cover
		0.000				1	
				PLANTAGO LA	Vica ATA	FAC	40 1
		- and Sea	10.2	CAREX SP	CEACHITY.	1.00	5
		- 1		1	I know a borne	F-1 c. 1	15 1
			-	EQUISETUM	LATENIGATUM	FACW	
	,	Y		RECLEPIAS	SPECIOSA	FAC+	5
RUBUS ARMEN	YCOS	FACU	5 4	BROMUS	SP	-	
				-			_
4					- de la companya della companya dell		10
			-	UNIDENTIFIABLE	GRAIN		60 1
Description of description of plant	species that are OBL, FAC	CM EAC. P	EAC:	50%. (bloto -	la Ration armamacus	of dom	nant species
Tapped Series: Chela	- gradly sad	y laam	Soil Taxonomy:	Vitritogrande	Haploxerall Draina	age Class:	
On Hydric Soils List?		Confirmed me			1		
		Communication	ap soil type or i	nclusion:	70.70		
Horizon Depth	Matrix Color		ap soil type or i doximorphic l		Texture	, Other	
	Matrix Color					, Other	
Horizon Depth	Matrix Color	Re	doximorphic I	eatures	LOAM		nd while t
Horizon Depth A 0-3 B 3-13	Matrix Color 10 1/8 3/2 2.5 Y 4/2	7.5 Y.R. 4/6	doximorphic I	eatures	LOAM	Other	nd while t
Horizon Depth	Matrix Color	7.5 Y.R. 4/6	doximorphic I	eatures	LOAM		nd while t
Horizon Depth A 0-3 B 3-13	Matrix Color 104R 3/2 2-5 Y 4/2 ROCK REFUSAL	75 YN 4/6	doximorphic I	eatures	SANDY LOAM W	u/ gravel a	
Horizon Depth A 0-3 B 3-13	Matrix Color 104R 3/2 2-5 Y 4/2 ROCK REFUSAL	7.5 Y 8 4/6	doximorphic I	FINE, Cemmon	SANDY LOAM W	of gravet g	
Horizon Depth A 0-3 B 3-13 Histosol/Ristic epipedor Sulfidic odor Concretions within 3° b	Matrix Color 104R 3/2 2-5 Y 4/2 ROCK REFUSAL	7 5 Y N 4/6 Gleyed On Hyd	doximorphic I	eatures	SANDY LOAM W	of gravet g	
Horizon Depth A 0-3 B 3-13 Histosol/Histic epipedor Sulfidic odor Concretions within 3° b	Matrix Color 10 1/R 3/2 2-5 Y 4/2 ROCK REFUSAL 10 10 10 10 10 10 10 10 10 1	7 5 Y N 9/6 Gleyed On Hyd Reducin Aquic n	doximorphic I	FINE, Cemmon	SANDY LOAM W	of gravet g	
Horizon Depth A 0-3 B 3-13 Histosol/Histic epipedor Sulfidic odor Concretions within 3' b Low matrix chroma and	Matrix Color 10 1/R 3/2 2-5 Y 4/2 ROCK REFVIAL gs a redox, within 10 bys	7 5 Y N Y/6 Gleyed On Hyd Reducir	doximorphic I	FINE, Cemmon	SANDY LOAM W	of gravet g	
Horizon Depth A 0-3 B 3-13 Histosol/Histic epipedor Salfidic oder Concretions within 3° b Low matrix chroma and	Matrix Color 10 1/R 3/2 2-5 Y 4/2 ROCK REFVIAL gs a redox, within 10 bys	7 5 Y N 9/6 Gleyed On Hyd Reducin Aquic n	doximorphic I	FLAVE, CEMINARY I matches profile	SANDY LOAM W	of gravet g	
Horizon Depth A 0-3 B 3-13 Histosol/Histic epipedor Salfidic oder Concretions within 3° b Low matrix chroma and	Matrix Color 10 1/R 3/2 2-5 Y 4/2 ROCK REFVIAL gs a redox, within 10 bys	7 5 Y N 9/6 Gleyed On Hyd Reducin Aquic n	doximorphic I	FLAVE, CEMINARY I matches profile	SANDY LOAM W	of gravet g	
Horizon Depth A 0-3 B 3-13 Histosol/Histic epipedor Sulfidic oder Concretions within 3° b Low matrix chroma and sthe hydric soil criterion in	Matrix Color 10 1/R 3/2 2-5 Y 4/2 ROCK REFVIAL gs a redox, within 10 bys	7 5 Y N 9/6 Gleyed On Hyd Reducin Aquic n	doximorphic I	FINE CEMINAN matches profile	SANDY LOAM W	of gravet g	
Horizon Depth A 0-3 B 3-13 Histosol/Ristic epipedor Sulfidic odor Concretions within 3' b Low matrix chroma and s the hydric soil criterion in	Matrix Color 10 1/R 3/2 2-5 Y 4/2 ROCK REFVIAL gs a redox, within 10 bys	7 5 Y N 9/6 Gleyed On Hyd Reducin Aquic n	within 10" bgs fric Soils List and ng conditions noisture regime	FINE CEMINAN matches profile	SANDY LOAM W	of gravet g	
Horizon Depth A 0-3 B 3-13 Histosol/Ristic epipedor Sulfidic odor Concretions within 3' b Low matrix chroma and s the hydric soil criterion in	Matrix Color 10 1/R 3/2 2-5 Y 4/2 ROCK REFVIAL 10 10 10 10 10 10 10 10 10 1	7 5 Y N 9/6 Gleyed On Hyd Reducin Yes	within 10" bgs fric Soils List and ng conditions noisture regime	FLAVE, CAMMAND I matches profile No Other:	SANDY LOAM W Sandy soils - High organ Sandy soils - Organic st Other: DIRECT OBSERVA	nic content in sur reaking or pan	face horizon
Horizon Depth A 0-3 B 3-13 Histosol/Ristic epipedor Sulfidic odor Concretions within 3' b Low matrix chroma and s the hydric soil criterion in Comments: Recorded Data: Recorded Data: Recorded Data: Recorded Data:	Matrix Color 10 1/R 3/2 2-5 Y 4/2 ROCK REFVIAL 10 10 10 10 10 10 10 10 10 1	7 5 Y N 9/6 Gleyed On Hyd Reducin Yes	within 10° bgs fric Soils List and ng conditions noisture regime Hydrole	FINE COMMON I matches profile No Other:	SANDY LOAM W Sandy soils - High organ Sandy soils - Organic st Other: DIRECT OBSERVA	nic content in sur reaking or pan	face horizon
Horizon Depth A 0-3 B 3-13 Histosol/Ristic epipedor Sulfidic oder Concretions within 3' b Low matrix chroma and a the hydric soil criterion in Comments: Recorded Data: Recorded Data: Depth of hundation:	Matrix Color 10 1/8 3/2 2.5 Y 4/2 ROCK RESULAL 10 10 10 10 10 10 10 10 10 1	Gleyed On Hyd Reducin Yes	within 10" bgs fric Soils List and ng conditions noisiture regime Hydrole Stream Gauge	TENTE COMMON I matches profile No Other: A Depth last	SANDY LOAM W SANDY LOAM W Sandy soils - High organ Sandy soils - Organic st Other: Other: DIRECT OBSERVA	nic content in sur reaking or pan	face horizon
Horizon Depth A 0-3 B 3-13 Histosol/Ristic epipedor Sulfidic odor Concretions within 3' b Low matrix chroma and sithe hydroc soil criterion in Comments: Recorded Data: Recorded Data: Recorded Data: Primary Hydrology Indic	Matrix Color 10 1/8 3/2 2.5 Y 4/2 ROCK RESULAL 10 10 10 10 10 10 10 10 10 1	Gleyed On Hyd Reducin Aquic n Yes Depth to Sate	within 10° bgs fric Soils List and ng conditions noisture regime Hydrole Stream Gauge No uration:	matches profile No Other: A Depth its \$ Secondary Hydrolo	SANDY LOAM W SANDY LOAM W Sandy soils - High organ Sandy soils - Organic st Other: Other: THE STIDE TO TAKTIN TIME: Water MAA TO Indicators:	nic content in sur reaking or pan	face horizon
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Horizon Depth A 0-3 B 3-13 Histosol/Histic epipedor Sulfidic odor Concretions within 3' b Low matrix chroma and sithe hydric soil criterion in Comments: Recorded Data: Recorded Data: Recorded Data: Petit Data: Depth of hundation: Inundated Saturated within 12' bg	Matrix Color 10 1/8 3/2 2.5 Y 4/2 ROCK RESULAL 10 10 10 10 10 10 10 10 10 1	Gleyed On Hyd Reducin Aquic in Yes Yes Deptriction Sedime	within 10° bgs fric Soils List and ng conditions noisture regime Hydrole Stream Gauge No uration: A	TENTE CAMMON I matches profile No	SANDY LOAM W SANDY LOAM W Sandy soils - High organic st Sandy soils - Organic st Other: Other: THE SITO ST TARTIN THE Water A/A The Water A/A The within 12' bgs: F	nic content in sur reaking or pan	face horizon
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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site BESCH SPRINGS Plage 7	City	County. Chiles		Sampling Date: 6 March 200
Applicant/Owner: WDFW			State: VV A	Sampling Point: SP-1
Investigator(s): WTK, JAW				
Landform (hillslope, terrace, etc.):	Loc	cal relief (concave,	convex, none): Concour	Slope (%):
Subregion (LRR):				
Soil Map Unit Name: Chelan gravell				
Are climatic / hydrologic conditions on the site typical	1 10			
Are Vegetation, Soil, or Hydrology				resent? Yes 🔀 No
Are Vegetation Soil, or Hydrology			eded, explain any answe	rs in Remarks.)
SUMMARY OF FINDINGS - Attach site	map showing sa	impling point l	ocations, transects	, important features, etc.
	No	is the Sampled	Area	No
	No	Within a Trettal	103	
VEGETATION				
		ominant Indicator	Dominance Test work	sheet:
Tree Stratum (Use scientific names.) 1		pecies? Status	Number of Dominant S That Are OBL, FACW,	
2			Total Number of Domin	iont.
3			Species Across All Stra	ita: <u>3</u> (B)
Total	Cover: N/A		Percent of Dominant Si That Are OBL, FACW,	
1. Robus acrospiacus	5	J FACU	Prevalence Index wor	ksheet:
2			100000000000000000000000000000000000000	Multiply by:
3.			OBL species	x 1 =
4.			FACW species	x 2 =
5			FAC species	x 3 =
Total	Cover:5		FACU species	x 4 =
Herb Stratum	U.S	1 500		x 5 =
1. Plantago lancestata 2. Equisetum laevigatum	40	V FACW	Column Totals:	(A) (B)
3. Asslepias speciosa	5	FAC	Prevalence index	= B/A =
			Hydrophytic Vegetation	on Indicators:
5.			Nominance Test is	>50%
6.			Prevalence Index i	s ≤3.01
7.			Morphological Ada	ptations (Provide supporting
a Unidentificiale grasses	ύU		1	s or on a separate sheet)
Total	Cover JOD+		Problematic Hydro	phytic Vegetation' (Explain)
Woody Vine Stratum 1.			Indicators of hydric so be present.	il and wetland hydrology must
2				
7237	Cover of Biotic Crus	. 2	Hydrophytic Vegetation Present? Yes	s X No
	peterson substant Lo		100000000000000000000000000000000000000	
Remarks: Vegetation dormant or de	ed, many her	backous spe	cire not identifi	in la le
Young shoots breaking thron	nh : 1' +	GIR-1 4865	on just began	
looked alegas property three	J. Marcaning	your jours	, , , , ,	

CO	• •
วบ	ᄔ

Sampling Point: SP-1

finchest	Color (moist)	96	Redo Color (moist)	%		Loc?	Texture	Remarks
0-3	10 YE 3/2	100					leam	
3-13	= 5 74/2		5 YR 4/6	2.	C	M	Sand I lear	J1
			5 IK 1/6	- 6			Sand Leave	
13+	Rock ict,	10.1			-			3 inches di
	centration, D=Dep					re Lining, F	RC=Rool Channe	
	dicators: (Applic	able to all LR	The state of the s		ed.)		Indicators fo	or Problematic Hydric Solls ³ :
Histosol (A	200		X Sandy Red					ick (A9) (LRR C)
Histic Epip			Stripped M	, ,				uck (A10) (LRR B)
Black Histi			Loamy Mu					d Vertic (F18)
	Sulfide (A4)	•	Loamy Gle	_	(F2)			ent Material (TF2)
	ayers (A5) (LRR (U)	Depleted N		(50)		Other (E	xplain in Remarks)
	((A9) (LRR D)	~ (A44)	Redox Dan					
	Below Dark Surfac (Surface (A12)	e (A11)	Depleted D					
			Redox Dep		F8)		A Market of	
	cky Mineral (S1) yed Matrix (S4)		Vernal Poo	ois (F9)				friydrophytic vegetation and
	yer (if present):						wenanu n	ydrology must be present
							1	
			-					
	es)			<u> </u>	-		Hydric Soil F	resent? Yes V No
Depth (inche Remarks	es)		-			-		
Depth (inche Remarks IYDROLOG Welland Hydro	Y ology Indicators:						Second	tary Indicators (2 or more required)
Depth (inche Remarks IYDROLOG Wetland Hydro Primary Indicat	Y ology Indicators: ors (any one indic		nt)	+/6+11			Second Wa	tary Indicators (2 or more required) after Marks (B1) (Riverine)
Depth (inche Remarks IYDROLOG Wetland Hydro Primary Indicat Surface W	Y ology Indicators: ors (any one indicator (A1)		nl)Salt Crus				Second Wa Se	tary Indicators (2 or more required) ster Marks (B1) (Riverine) diment Deposits (B2) (Riverine)
Depth (inche Remarks IYDROLOG Wetland Hydre Primary Indicat Surface W High Wate	Y ology Indicators: fors (any one indicator (A1) of Table (A2)		Salt Crus	ust (B12)	(D42)		Second Wa	tary Indicators (2 or more required) ster Madks (B1) (Riverine) diment Deposits (B2) (Riverine) il Deposits (B3) (Riverine)
Depth (inche Remarks IYDROLOG Wetland Hydre Primary Indicat Surface W High Wate Safuration	Y ology Indicators: lors (any one indic fater (A1) f Table (A2) (A3)	alor is sufficie	Salt Crus Biotic Cru Aquatic Ir	ust (B12) nvertebrati			Second Wa Se On Dra	tary Indicators (2 or more required) ster Mads (B1) (Riverine) diment Deposits (B2) (Riverine) il Deposits (B3) (Riverine) ainage Patterns (B10)
Depth (inche Remarks IYDROLOG Wetland Hydre Primary Indicat Surface W High Wate Saturation Water Mar	Y ology Indicators: ors (any one indicator (A1) r Table (A2) (A3) ks (B1) (Nonriver	अं or is sufficie	Salt Crus Solte Crus Aquatro Ir Hydroglen	ust (B12) nvertebrate n Sulfide O	dor (C1)		Second Wa Se 	tary Indicators (2 or more required) ster Marks (B1) (Riverine) diment Deposits (B2) (Riverine) il Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2)
Depth (inche Remarks IYDROLOG Wetland Hydre Primary Indicat Surface W High Wate Saturation Water Mari Sediment I	Y ology Indicators: ors (any one indicator (Af) or Table (A2) (A3) ks (B1) (Nonriver) Deposits (B2) (No	alor is sufficie ine) nriverine)	Self Crus Self Crus Biotic Cru Aquatic Ir Hydrogler Oxidized	ust (B12) nvertebrato n Sulfide O Rhizosphe	dor (C1) cres along	J Living Ro	Second Was Second Christian Christia	tary Indicators (2 or more required) ster Marks (B1) (Riverine) diment Deposits (B2) (Riverine) il Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) in Muck Surface (C7)
Depth (inche Remarks IYDROLOG Wetland Hydre Primary Indicat Surface W High Wate Saturation Water Mari Sediment I Drift Depon	Y ology Indicators: ors (any one indicators (any one indicators) or Table (A2) (A3) ks (B1) (Nonriver) Deposits (B2) (Nonriver)	alor is sufficie ine) nriverine)	Salt Crus Siotic Cru Aquatre In Hydroglen Oxidized Presence	ust (B12) nvertebraton Sulfide O Rhizospho of Reduci	dor (C1) eres along ed Iron (C	(4)	Second Was Second Christ Christ Christ Crist Crist Crist Crist Crist	tary Indicators (2 or more required) ster Marks (B1) (Riverine) diment Deposits (B2) (Riverine) il Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) in Muck Surface (C7) ayfish Burrows (C8)
Depth (inche Remarks IYDROLOG Wetland Hydre Primary Indicat Surface W High Wate Saturation Water Mari Sediment I Drift Depoi	Y ology Indicators: ors (any one indic fater (Af) or Table (A2) (A3) ks (B1) (Nonriver) Deposits (B2) (Nonriver) cid Cracks (B6)	elor is sufficient ine) nriverine) rine)	Self Crus Biotic Cru Aquatrc Ir Hydroglen Oxidized Presence Recent Iri	ust (B12) nvertebrate ii Sulfide O Rhizosphe e of Reduct on Reduct	dor (C1) cres along ed Iron (C ion in Plo		Second Wa Second Christophia Christophia Christophia Christophia Crack (C6) Salida	tary Indicators (2 or more required) ster Marks (B1) (Riverine) diment Deposits (B2) (Riverine) il Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) in Muck Surface (C7) ayfish Burrows (C8) turation Visible on Aenal Imagery (C8)
Depth (inche Remarks IYDROLOG Wetland Hydre Primary Indicat Surface W High Wate Safuration Water Mari Sediment I Drift Depositions Surface Softment and allogous	Y ology Indicators: ors (any one indicater (A1) or Table (A2) (A3) ks (B1) (Nonriver) Deposits (B2) (Nonriver) of Cracks (B6) Visible on Aerial	elor is sufficient ine) nriverine) rine)	Self Crus Biotic Cru Aquatrc Ir Hydroglen Oxidized Presence Recent Iri	ust (B12) nvertebraton Sulfide O Rhizospho of Reduci	dor (C1) cres along ed Iron (C ion in Plo	(4)	Second Wa Second Christophia Christophia Christophia Christophia Crack (C6) Sal Sh.	tary Indicators (2 or more required) ster Marks (B1) (Riverine) diment Deposits (B2) (Riverine) il Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) in Muck Surface (C7) syfish Burrows (C8) turation Visible on Aenal Imagery (C8 allow Aquitard (D3)
Depth (incher Remarks IYDROLOG Wetland Hydre Primery Indicat Surface W High Wate Saturation Water Mari Sediment I Drift Deposition Surface So Imunidation Water-Stai	Y ology Indicators: ors (any one indic fater (A1) or Table (A2) (A3) ks (B1) (Nonriver Deposits (B2) (Non sits (B3) (Nonriver or Cracks (B6) Visible on Aerial ined Leaves (B9)	elor is sufficient ine) nriverine) rine)	Self Crus Biotic Cru Aquatrc Ir Hydroglen Oxidized Presence Recent Iri	ust (B12) nvertebrate ii Sulfide O Rhizosphe e of Reduct on Reduct	dor (C1) cres along ed Iron (C ion in Plo	(4)	Second Wa Second Christophia Christophia Christophia Christophia Crack (C6) Sal Sh.	tary Indicators (2 or more required) ster Marks (B1) (Riverine) diment Deposits (B2) (Riverine) il Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) in Muck Surface (C7) ayfish Burrows (C8) turation Visible on Aenal Imagery (C8)
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Depth (inche Remarks IYDROLOG Wetland Hydre Primary Indicat Surface W High Wate Safuration Water Mari Sediment I Drift Depositions Surface Softment and allogous	Y ology Indicators: fors (any one indic fater (A1) of Table (A2) (A3) ks (B1) (Nonriver) Deposits (B2) (Non sits (B3) (Nonriver) of Cracks (B6) Visible on Aerial ind Leaves (B9) fions:	elor is sufficient ine) nriverine) rine)	Salt Crus Biotic Cru Aquatic ir Hydroglen Oxidized Presence Recent iri Other (Ex	ust (B12) nvertebraton Sulfide O Rhizosphe of Reduction Red	dor (C1) cres along ed fron (C ion in Plo emarks)	(4)	Second Wa Second Christophia Christophia Christophia Christophia Crack (C6) Sal Sh.	tary Indicators (2 or more required) ster Marks (B1) (Riverine) diment Deposits (B2) (Riverine) il Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) in Muck Surface (C7) syfish Burrows (C8) turation Visible on Aenal Imagery (C8 allow Aquitard (D3)
Depth (inche Remarks IYDROLOG Wetland Hydro Primary Indicat Surface W High Wate Saturation Water Mari Sediment I Drift Depois Surface So Inunidation Water-Stail	Y ology Indicators: fors (any one indicators) fater (A1) f Table (A2) (A3) ks (B1) (Nonriver) Deposits (B2) (Nonriver) Of Cracks (B6) Visible on Aerial fions: Present? Y	alor is sufficient ine) nriverine) rine) magery (87)	Salt Crus Biotic Cru Aquatic Ir Hydroglen Oxidized Presence Recent Ir Other (Ex	ust (B12) nvertebraton Sulfide O Rhizosphe of Reduction Red	dor (C1) eres along ed Iron (C ion in Plo emarks)	(4) wed Soils (Second Wa Second Christophia Christophia Christophia Christophia Crack (C6) Sal Sh.	tary Indicators (2 or more required) ster Marks (B1) (Riverine) diment Deposits (B2) (Riverine) il Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) in Muck Surface (C7) syfish Burrows (C8) turation Visible on Aenal Imagery (C8 allow Aquitard (D3)
Depth (inche Remarks RYDROLOG Wetland Hydre Primary Indicat Surface W High Water Saturation Water Mari Sediment I Drift Deposition Surface So Imunidation Water-Stail Field Observat Surface Water Water Table Pr Saturation Press	Y ology Indicators: ors (any one indicators: ors (any one indicators) fater (A1) or Table (A2) (A3) ks (B1) (Nonriver) Deposits (B2) (Nonriver) Octorists (B3) (Nonriver) of Cracks (B6) Visible on Aenal Indicators or Cracks (B9) fions: Present? Y sent? Y	elor is sufficient ine) nriverine) rine) magery (87)	Salt Crus Salt Crus Biotic Cru Aquatro Ir Hydrogen Oxidized Presence Recent Ir Other (Ex	ust (B12) nvertebrate n Sulfide O Rhizosphe e of Reduct on Reduct xplain in Re nches):	dor (C1) eres along ed Iron (C ion in Plo emarks)	(4) wed Soils (Second Wa Second Christophia Christophia Christophia Christophia Crack (C6) Sal Sh.	tary Indicators (2 or more required) ster Marks (B1) (Riverine) diment Deposits (B2) (Riverine) il Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) in Muck Surface (C7) ayfish Burrows (C8) turation Visible on Aenal Imagery (C8 allow Aquitard (D3) C-Nieutral Test (D5)
Depth (inche Remarks) RYDROLOG Wetland Hydro Primary Indicat Surface W High Water Saturation Water Mari Sediment I Drift Depois Surface So Inundation Water-Stail Field Observat Surface Water Water Table Pr Saturation Pres (includes capill	y ology Indicators; lors (any one indic fater (A1) r Table (A2) (A3) ks (B1) (Nonriver) Deposits (B2) (Nonriver) of Cracks (B6) Visible on Aerial I med Leaves (B9) tions: Present? y sent? y ary fringe)	es No	Salt Crus Biotic Cru Aquatic ir Hydroglen Oxidized Presence Recent Iri Other (Ex	ust (B12) nvertebrate n Sulfide O Rhizosphe e of Reduct con Reduct xplain in Re nches):	dor (C1) eres along ed Iron (C ion in Plo emarks)	(4) wed Soils (Second Wa Se Con	tary Indicators (2 or more required) ster Marks (B1) (Riverine) diment Deposits (B2) (Riverine) il Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) in Muck Surface (C7) ayfish Burrows (C8) turation Visible on Aenal Imagery (C8 allow Aquitard (D3) C-Nieutral Test (D5)
Depth (inche Remarks) RYDROLOG Wetland Hydro Primary Indicat Surface W High Water Saturation Water Mari Sediment I Drift Depois Surface So Inundation Water-Stail Field Observat Surface Water Water Table Pr Saturation Pres (includes capill	Y ology Indicators: fors (any one indicators) for Table (A2) (A3) ks (B1) (Nonriver) Deposits (B2) (Nonriver) Circle (Cracks (B6) Visible on Aenal Index (B9) fions: Present? Y sent? Y ary fringe) rded Data (stream	ator is sufficiently ine) Ine) Ine) Inagery (B7) Ines Notes	Salt Crus Biotic Cru Aquatro Ir Hydroglen Oxidized Presence Recent Ir Other (Ex	ust (B12) nvertebrate n Sulfide O Rhizosphe e of Reduct on Reduct xplain in Re nches):	dor (C1) eres along ed Iron (C ion in Plo emarks)	Wet	Second Wa Se Chr Chr Chr Cts (C3) Thi Cra (C6) Sal Sh FA	tary Indicators (2 or more required) ster Marks (B1) (Riverine) diment Deposits (B2) (Riverine) il Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) in Muck Surface (C7) ayfish Burrows (C8) turation Visible on Aenal Imagery (C9 allow Aquitard (D3) C-Neutral Test (D5)
Depth (inche Remarks) IYDROLOG Wetland Hydre Primary Indicate Water Mark Saturation Water Mark Depth Surface Science Science Science Science Stater Stater Stater Saturation Present Includes capill Describe Reco	Y ology Indicators: fors (any one indicators) for Table (A2) (A3) ks (B1) (Nonriver) Deposits (B2) (Nonriver) Circle (Cracks (B6) Visible on Aenal Index (B9) fions: Present? Y sent? Y ary fringe) rded Data (stream	ator is sufficiently ine) Ine) Ine) Inagery (B7) Ines Notes	Salt Crus Biotic Cru Aquatro Ir Hydroglen Oxidized Presence Recent Ir Other (Ex	ust (B12) nvertebrate n Sulfide O Rhizosphe e of Reduct on Reduct xplain in Re nches):	dor (C1) eres along ed Iron (C ion in Plo emarks)	Wet	Second Wa Se Con	tary Indicators (2 or more required) ster Marks (B1) (Riverine) diment Deposits (B2) (Riverine) il Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) in Muck Surface (C7) ayfish Burrows (C8) turation Visible on Aenal Imagery (C9 allow Aquitard (D3) C-Neutral Test (D5)
Depth (inche Remarks) RYDROLOG Wetland Hydro Primary Indicat Surface W High Water Saturation Water Mari Sediment I Drift Depois Surface So Inundation Water-Stail Field Observat Surface Water Water Table Pr Saturation Pres (includes capill	Y ology Indicators: fors (any one indicators) for Table (A2) (A3) ks (B1) (Nonriver) Deposits (B2) (Nonriver) Circle (Cracks (B6) Visible on Aenal Index (B9) fions: Present? Y sent? Y ary fringe) rded Data (stream	ator is sufficiently ine) Ine) Ine) Inagery (B7) Ines Notes	Salt Crus Biotic Cru Aquatro Ir Hydroglen Oxidized Presence Recent Ir Other (Ex	ust (B12) nvertebrate n Sulfide O Rhizosphe e of Reduct on Reduct xplain in Re nches):	dor (C1) eres along ed Iron (C ion in Plo emarks)	Wet	Second Wa Se Chr Chr Chr Cts (C3) Thi Cra (C6) Sal Sh FA	tary Indicators (2 or more required) ster Marks (B1) (Riverine) diment Deposits (B2) (Riverine) it Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) in Muck Surface (C7) ayfish Burrows (C8) turation Visible on Aenal Imagery (C9 allow Aquitard (D3) C-Neutral Test (D5)
Depth (inche Remarks) IYDROLOG Wetland Hydre Primary Indicate Water Mark Saturation Water Mark Depth Surface Science Science Science Science Stater Stater Stater Saturation Present Includes capill Describe Reco	Y ology Indicators: fors (any one indicators) for Table (A2) (A3) ks (B1) (Nonriver) Deposits (B2) (Nonriver) Circle (Cracks (B6) Visible on Aenal Index (B9) fions: Present? Y sent? Y ary fringe) rded Data (stream	ator is sufficiently ine) Ine) Ine) Inagery (B7) Ines Notes	Salt Crus Biotic Cru Aquatro Ir Hydroglen Oxidized Presence Recent Ir Other (Ex	ust (B12) nvertebrate n Sulfide O Rhizosphe e of Reduct on Reduct xplain in Re nches):	dor (C1) eres along ed Iron (C ion in Plo emarks)	Wet	Second Wa Se Chr Chr Chr Cts (C3) Thi Cra (C6) Sal Sh FA	tary Indicators (2 or more required) ster Marks (B1) (Riverine) diment Deposits (B2) (Riverine) it Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) in Muck Surface (C7) ayfish Burrows (C8) turation Visible on Aenal Imagery (C9 allow Aquitard (D3) C-Neutral Test (D5)

WETLAND DETERMINATION DATA FORM – Arid West Region

	City/County	Chalan Sampling Date: La Karl
pplicant/Owner: WOFW		State: MA Sampling Point: 50-2-
		ship, Range: T27N/R23 E See ??
		oncave, convex, none): Slope (%):
bregion (LRR):	A A C	Long: Datum:
al Map Unit Name	Uly Sandy loans	NWI classification: PSS/EM.
e climatic / hydrologic conditions on the site typ		
e Vegetation, Soil, or Hydrolog	y significantly disturbed?	Are "Normal Circumstances" present? Yes 🔀 No
e Vegetation, Soil, or Hydrolog	y naturally problematic?	(If needed, explain any answers in Remarks.)
UMMARY OF FINDINGS – Attach s	ite map showing sampling	point locations, transects, important features, etc
Hydrophytic Vegetation Present? Yes	V No le the	Sampled Area
Hydric Scil Present? Yes _	V No	a Wetland? Yes No
Wetland Hydrology Present? Yes_	V_ No	103_7_ NS
Remarks:		
EGETATION		
	Absolute Dominant In	dicator Dominance Test worksheet:
Tree Stratum (Use scientific names)	% Cover Species?	Number of Dominant Species
·		That Are OBL, FACW, or FAC:(A)
		Total Number of Dominant
		Species Across All Strata: (B)
·		Percent of Dominant Species
Sapling/Shrub Stratum	Total Cover:	That Are OBL, FACW, or FAC: 50/0 (A/B)
L. Ruby ameniacus	5% V	FACU Prevalence Index worksheet:
2.		Total % Cover of Multiply by
		OBL species x 1 =
		FACW species x 2 =
i		FAC species x 3 = 3
•	Total Cover: <u>5:7a</u>	FACU species x 4 =
lerb Stratum		UPL species <u>□ □ x 5 = □ □</u>
Phalaris arundonecan		Column Totals: (A) (B)
Rusen cripus		Prevalence Index = B/A = 3.0
·		March stanion! Administrator of Committee standards
		data in Remarks or on a separate sheet)
·	Total Cover: 15470	Problematic Hydrophytic Vegetation (Explain)
Voody Vine Stratum	Total Sorei.	
		'Indicators of hydric soil and wetland hydrology must
		be present.
	Total Cover:	Hydrophytic
% Bare Ground in Herb Stratum		Vegetation Present? Yes V No
The state of the s		
Pemarke:		
Remarks:		

	ription: (Describe t	to the dep	oth need	ed to docu	ment the	Indicator	or confirm	the absence of	of Indicators.)	
Depth	Matrix	399 10			ox Feature			024000000000		
(inches)	Color (moist)	_%_	Cala	(moist)	- %	Type	Loc	Texture	Remarks	
0-4	10 1R 7/2	100		-			-	5,1		
4-16	2.51 712	98	.1.2	1844	2	<u></u>	_M_	SL		
			-							
	oncentration, D=Depl Indicators: (Applica		LRRs, u	nless athe	rwise not		re Lining, R		el, M≃Malrix for Problematic Hydrłc Solls³;	
Histosol			\times	Sandy Red					uck (A9) (LRR C)	
	vipedon (A2)		_	Stripped Ma	, ,				uck (A10) (LRR B)	
Black Hi	100000			Loamy Mud	-				ed Vertic (F18)	
	n Sulfide (A4) I Layers (A5) (LRR C	٠,		Loamy Gle Depleted M		((+2)			rent Material (TF2)	
_	ck (A9) (LRR D)	.)	_	Redox Dark		(E6)		Other (i	Explain in Remarks)	
	i Below Dark Surface	(A11)		Depleted D		, ,				
	rk Surface (A12)	(,		Redox Dep						
Sandy M	lucky Mineral (S1)							Indicators of	of hydrophytic vegetation and	
Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (S4)			Vernal Pools (F9)					wetland hydrology must be present.		
								A CHAILO	hydrology must be present.	
	ayor (if present):	-			-			Wettatio	hydrology must be present.	
		-						Wetturd	hydrology must be present.	
Restrictive L Type					-			100000	Present? Yes V No	
Restrictive L Type	ayer (if present):							100000		
Restrictive t Type Depth (inc Remarks	ayor (if present):							100000		
Type	ayor (if present):							Hydric Soil i	Present? Yes No	
Type	ayor (if present): thes):	etor is suff	icient)					Hydric Soil I	Present? Yes No	
Type	ayer (if present): thes): GY trology Indicators: ators (any one indica	rtor is suff	icient)	Salt Crust	(B11)			Hydric Soil I	Present? Yes No	
Type	ayor (if present): thes):	rtor is suff	icient)	Salt Crust Biotic Crus				Hydric Soil I	Present? Yes No	
Type	GY Irology Indicators: ators (any one indicators) tor Table (A2)	rloor is suff	_	Biotic Cru	st (B12)	es (B13)		Hydric Soil I	dary Indicators (2 or more required) ater Marks (B1) (Riverine) adment Deposits (B2) (Riverine) iff Deposits (B3) (Riverine)	
Type	GY Irology Indicators: ators (any one indicators) tor Table (A2)		-		st (B12) vertebrate			Second War See Cr Dr	dary Indicators (2 or more required) ater Marks (81) (Riverine) adment Deposits (B2) (Riverine)	
Type	GY Irology Indicators: alors (any one indicators) Valer (A1) Icr Table (A2) In (A3)	ne)	-	Biotic Cru Aquatic In Hydrogen	st (B12) vertebrate Sulfide Or	dor (C1)	Living Roo	Second War Seit I	dary Indicators (2 or more required) ater Marks (B1) (Riverine) adment Deposits (B2) (Riverine) atinage Patterns (B10)	
Type	GY Irology Indicators: alors (any one indicators (Bn) (Nonrivering (Any one indicators (Bn) one	ne) riverine)	-	Biotic Cru Aquatic In Hydrogen	st (B12) vertebrate Sulfide Or Rhizosphe	dor (C1) res along	_	Second William Se Cor Cor Cor Triss (C3)	dary Indicators 12 or more required) ater Marks (B1) (Riverine) adment Deposits (B2) (Riverino) at Deposits (B3) (Riverine) ainage Patterns (B10) y-Season Water Table (C2)	
Type	GY Irology Indicators: alors (any one indicators (AT) for Table (A2) in (A3) arks (B1) (Nonrivering (Deposits (B2) (Nonrivering (B2) (Non	ne) riverine)	-	Biotic Crus Aquatic In Hydrogen Oxidized F Presence	st (B12) vertebrate Sulfide Or Rhizosphe of Reduce	dor (C1) res along ad Iron (Ca	_	Second	dery Indicators [2 or more required] ater Marks (B1) (Riverine) adment Deposits (B2) (Riverine) atinage Patterns (B10) y-Season Water Table (C2) in Muck Surface (C7) ayfish Burrows (C8)	
Pentrictive L Type Depth (inc Remarks: YDROLOG Velland Hyc Primary Indic Surface V High Wal Saturatio Water Ma Sedimen Drift Dep Surface S	GY Irology Indicators: alors (any one indicators (Any one indicators) alor Table (A2) an (A3) arks (B1) (Nonrivering (Deposits (B2) (Nonrivering (B3) (Nonr	ne) riverine) ne)		Biotic Crus Aquatic In Hydrogen Oxidized F Presence	st (B12) vertebrate Sulfide Or Rhizosphe of Reduce on Reducti	dor (C1) resiatong ed fron (C4 on in Ploy	1)	Second	dery Indicators [2 or more required] ater Marks (B1) (Riverine) adment Deposits (B2) (Riverine) atinage Patterns (B10) y-Season Water Table (C2) in Muck Surface (C7) ayfish Burrows (C8)	
Permarks YDROLOG Velland Hyd Surface V High Wai Saturatio Vater Ma Sedimen Drift Dep Surface S Inundatio Water-St	GY trology Indicators: ators (any one indicators) trology Indicators: ators (any one indicators) to Table (A2) to (A3) arks (B1) (Nonriverir t Deposits (B2) (Nonriverir t Deposits (B3) (Nonriverir Soil Cracks (B6) to Visible on Aerial Indianed Leaves (B9)	ne) riverine) ne)		Biotic Crui Aquatic In Hydrogen Oxidized F Presence Recent Inc	st (B12) vertebrate Sulfide Or Rhizosphe of Reduce on Reducti	dor (C1) resiatong ed fron (C4 on in Ploy	1)	Second	dary Indicators [2 or more required] ater Marks (B1) (Riverine) adment Deposits (B2) (Riverine) alriage Patterns-(B10) y-Season Water Table (C2) in Muck Surface (C7) ayfish Burrows (C8) attraction Visible on Aeriai Imagery (C	
Primary Indic Surface V High Water Ma Sedimen Drift Dep Surface S Inundation Water S Inun	GY Irology Indicators: ators (any one indicators) tor Table (A2) tor Table (A2) tor Table (B1) (Nonriverint Deposits (B2) (Nonriverint Deposits (B3) (Nonriverint Deposits (B6)) tor Visible on Aerial In ained Leaves (B9) rations:	ne) riverine) (ne) nagery (B	7)	Biotic Crui Aquatic in Hydrogen Oxidized F Presence Recent Iro Other (Exp	st (B12) vertebrate Sulfide Oc Rhizosphe of Reduce on Reducti	dor (C1) resiatong ed fron (C4 on in Ploy	1)	Second	dary Indicators [2 or more required] ater Marks (B1) (Riverine) adment Deposits (B2) (Riverine) alriage Patterns (B10) y-Season Water Table (C2) in Muck Surface (C7) ayrish Burrows (C8) attration Visible on Aeriai Imagery (Catallow Aquitard (D3)	
Perincitive L Type Depth (inc Remarks YDROLOG Netland Hyc Primary Indic Surface V High Wat Sedimen Drift Dep Surface S Inundatio Water-St Field Observ Surface Water	GY Irology Indicators: ators (any one indicators) to Table (A2) in (A3) arks (B1) (Nonriverint Deposits (B2) (Nonriverint Deposits (B3) (Nonriverint Deposi	ne) riverine) ne) nagery (B	7)	Biotic Crui Aquatic In Hydrogen Oxidized F Presence Recent Inc Other (Exp	st (B12) vertebrate Sulfide Or Rhizosphe of Reduce on Reducti plain in Re	dor (C1) res along ed Iron (C4 on in Plow emarks)	t) ved Soils (0	Second	dary Indicators [2 or more required] ater Marks (B1) (Riverine) adment Deposits (B2) (Riverine) alriage Patterns (B10) y-Season Water Table (C2) in Muck Surface (C7) ayrish Burrows (C8) attration Visible on Aeriai Imagery (Catallow Aquitard (D3)	
Perinary India Saturatio Water Ma Sedimen Drift Dep Surface V Inundatio Water-St Field Observ Surface Water	GY Irology Indicators: ators (any one indicators) to Table (A2) in (A3) arks (B1) (Nonriverint Deposits (B2) (Nonriverint Deposits (B3) (Nonriverint Deposi	ne) riverine) ne) nagery (B	7)	Biotic Crui Aquatic In Hydrogen Oxidized F Presence Recent Inc Other (Exp	st (B12) vertebrate Sulfide Oc Rhizosphe of Reduce on Reducti	dor (C1) res along ed Iron (C4 on in Plow emarks)	N) ved Soils (C	Second	dary Indicators (2 or more required) ater Marks (B1) (Riverine) ater Marks (B1) (Riverine) ater Marks (B3) (Riverine) attraction (B3) (Riverine) amage Patterns (B10) y-Season Water Table (C2) in Muck Surface (C7) aytish Burrows (C8) aturation Visible on Aerial Imagery (C) allow Aquitard (D3) in C-Neutral Test (D5)	
Perstrictive L Type Depth (inc Remarks YDROLOG Remarks Ydrace Vater Maler-St Field Observ Surface Water Nater Table & Saturation Princludes capincludes capinclud	GY Irology Indicators: alors (any one indicators) alors (any one indicators) alors (any one indicators) alors (any one indicators) alors (B1) (Nonrivering) alors (B2) (Nonrivering) alors (B3) (Nonrivering) alors (B4) (No	ne) riverine) rie) nagery (B.	7) No J No J No J	Biotic Crui Aquatic In Hydrogen Oxidized F Presence Recent Irc Other (Exp Depth (in Depth (in	st (B12) vertebrate Sulfide Or Rhizosphe of Reduce on Reducti plain in Re uches)	dor (C1) res along ed fron (C4 on in Plow emarks)	wed Soils (C	Secondary Secondary	dary Indicators [2 or more required] ater Marks (B1) (Riverine) adment Deposits (B2) (Riverine) ainage Patterns (B10) y-Season Water Table (C2) in Muck Surface (C7) ayrish Burrows (C8) aturation Visible on Aeriai Imagery (Callow Aquitard (D3)	

WETLAND DETERMINATION DATA FORM – Arid West Region

Lat: or this time of year? significantly disti	tion, Township cal relief (conca Yes X I urbed? matic?	
Lat: or this time of year? significantly district naturally probler nap showing sa No	Yes X I urbed? matic? mpling poi	No (If no, explain any answers in Remarks.) Interested of explain any answers, important features, etc.
Lat: or this time of year? significantly distributed in the showing saturally problem in the showing saturally in the s	Yes X Isurbed? matic? mpling poi	Long: Datum:
or this time of year? significantly dista naturally problemap showing sa No	Yes X I	NWI classification. No (If no, explain in Remarks.) Are "Normal Circumstances" present? Yes No (If needed, explain any answers in Remarks.) Int locations, transects, important features, etc.
or this time of year?significantly distr naturally probler nap showing sa No No	Yes X Is urbed? matic? mpling poi	No (If no, explain in Remarks.) Are "Normal Circumstances" present? Yes No
significantly distant and showing sa	natic? mpling poi	Are "Normal Circumstances" present? Yes No No No No No No No No
naturally probler nap showing sa	mpling poi	off needed, explain any answers in Remarks.) nt locations, transects, important features, etc. pled Area
naturally probler nap showing sa	mpling poi	off needed, explain any answers in Remarks.) nt locations, transects, important features, etc. pled Area
nap showing sa	mpling poi	nt locations, transects, important features, etc.
NoX		5000 TO TO THE TOTAL THE TOTAL TO THE TOTAL THE TOTAL TO
	within a W	etland? Yes No X
Absolute Dr	ominant Indica	tor Dominance Test worksheet:
% Cover Sp		
		Total Number of Dominant
		Species Across All Strata: 2 (B)
		Percent of Dominant Species
Cover:		That Are OBL. FACW, or FAC: 50 (A/B)
		Prevalence Index worksheet:
		Total % Cover of Multiply by
		OBL species x 1 =
		FACW species x 2 = 2
		FAC species
Cover:		FACU species x 4 = UPL species x 5 = 5
25	J FAG	
10	FA	Column Totals (A) (b)
T	UP.	Prevalence Index = 8/A =3,5
50		
5	FAC	
		Prevalence Index is ≤3.01
		Morphological Adaptations' (Provide supporting data in Remarks or on a separate sheet)
	_	Problematic Hydrophytic Vegetation (Explain)
Jover		
		Indicators of hydric soil and wetland hydrology must
	1,400	be present.
Cover;		Hydrophytic
Cover of Biotic Crust		Vegetation Present? Yes No
	25 10 T 50 5	25 / FAC 10 FAC T UPL 50 V UPL 5 FAC

The second secon	noist) %	Color (moist) % Type Loc	Texture Remarks
0-19 2.5 Y	1/2 100		yery Fine gand, ban
pe: C=Concentration	, D=Depletion, (Applicable to	RM=Reduced Matrix 2 Location: PL=Pore Uning. all LRRs, unless otherwise noted.) Sandy Redox (S5) Stripped Matrix (S6) Loamy Mucky Mineral (F1) Loamy Gleyed Matrix (F2) Depleted Matrix (F3)	RC=Root Channel, M=Matrix Indicators for Problematic Hydric Soils ³ : 1 cm Muck (A9) (LRR C)2 cm Muck (A10) (LRR B) Reduced Vertic (F18) Red Parent Matenal (TF2) Other (Explain in Remarks)
Depleted Below Dark Thick Dark Surface (Sandy Mucky Minera Sandy Gleyed Matrix estrictive Layer (If pre	(Surface (A11) A12) all (S1) ((S4)	Redox Dark Surface (F6) Depicted Dark Surface (F7) Redox Depressions (F8) Vernal Poots (F9)	Indicators of hydrophytic vegetation and wetland hydrology must be present
Type Depth (inches):			Hydric Sail Present? YesNoX
Type Depth (inches): emarks: DROLOGY	cators:		
Type Depth (inches): emarks: /DROLOGY /etfand Hydrology Indi		sufficient)	Hydric Soil Present? Yes No
Type	ne indicator is : 2) onriverine) B2) (Nonriverine) (B6) Aerial Imagery	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recent Iron Reduction in Plowed Soils	Secondary indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Enft Deposits (B3) (Riverine) Eramage Pattems (B10) Ery-Season Water Table (C2) Thin Muck Surface (C7) Crayfish Burrows (C8)
Type	ne indicator is : 2) onriverine) B2) (Nonriverine) donriverine) (B6) Aerial Imagery (B9)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recent Iron Reduction in Plowed Soils Other (Explain in Remarks) No X Depth (inches)	Secondary indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Enft Deposits (B3) (Riverine) Eranage Pattems (B10) Ery-Season Water Table (C2) Thin Muck Surface (C7) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aguitard (D3)

URS Routine On-site Wetlands Determination

URS Seattle Office, 1501 4th Ave, Suite 1400, Seattle, Washington 98102 Tele: 206.438.2700

Project Name: Rate Springs Plans Project Location: Table was Harry		work Date: 6 March	Z.co [*]] State:	uΔ
Applicant/Owner: WDEW		stigator(s): WTK, JA		
Transect/Plot: SP-4 Plot Location: Normal circumstances exist on site? Yes	s No 🗆			
Significantly disturbed (atypical situation)? Yes				
Is this a potential Problem Area? Yes	B □ No ☑			
	Vegetation			
Normal plot size/shape? (radius - trees & shrubs =	= 30', herbs = 5'/ circular) Yes (Ind. % Raw	No 🗆	I lad	% Raw
Species	Status Cover	Species	Ind. Status	Cover
		acus sertoratum	UPL	5
T		scur thansus	UPL	5
е	Cuax	5ρ	-	2
e s	H Icu	pseudacurus cf.	780	2
		return Jasugatun	FACIN	10
S Rusus armeniocus		us tenvis	FAC	30
r	5 unide	when gain	-	40
u b			+	
S				
Percent of dominant plant species that are OBL, Fills the hydrophytic vegetation criteria met?	ACW, FAC+, & FAC: No 🔲	= also includes sap		nant species ts <20 ft fall)
Comments: Problem vege - OBL + FA	CV growing together as domini	ents		
	Soil			
Mapped Series: Clalar grandly Sandy	•	ranka Hapluxeroll Dra	inage Class:	
On Hydric Soils List? Yes No	Confirmed map soil type or inclusion:	Tart	Chlory	
Horizon Depth Matrix Color	Redoximorphic Features		ire, Other	
A. 0-3 10-1/2		gilf loan		
Az 3-6 2.5 Y 4/1.5	2=1-4/6	Fire Sandy loan		
B. 9-10-1/2 10-9 10-1/2	75 YR 4/6 Sine district			
B 9-16 164R3/2	Gleyed within 10" bgs	Sandy soils - High on	AND REAL PROPERTY AND REAL PRO	face horizon
Sulfidic odor	On Hydric Soils List and matches prof			IGUO HUNEDII
Concretions within 3" bgs	Reducing conditions	Other:		
Low matrix chroma and redox, within 10" bgs	Aquic maisture regime			
Is the hydric sail criterion met?	Yes No 🗌			
Comments: rock refusel at 16				
	Hydrology			
Recorded Data:		FAUCUS STATE		
Recorded Data Available: Aerial Photo	os: 🔟 Stream Gauge: 🔲 (Other WPFW abser	หลักลาร์	
Field Data: Growing Season?	Yes 🖾 No 🗆			
Depth of Inundation: N/A		Depth to Free Water: N/A		
Primary Hydrology Indicators:		Hydrology Indicators: d Root Channels within 12" bgs	FAC- neutral test	
Saturated within 12" bgs			Water-stained leav	es
Wetland drainage pattern	Water marks Other:			
Is the hydrology criterion met?	Yes 🖾 No 🔲			
Comments: ALCORDING TO WOFW,	THIS HERA IS INDIVIDATED	(APRIL - JUNE)		
	Determination			
Welland? Yes ⊠ No □ Cowardin Class/ HGM Class: P34 / LAIKE	FRINGE			
Commonto				
Comments:				

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site Beach Corne			Sampling Date: 6 March 2007
Applicant/Owner WBFW	-134		State: WA Sampling Point SP-4
Investigator(s): WTK JAW		Section, Township, Rar	nge
Landform (hillslope, terrace, etc.):	a) n	Local relief (concave, o	convex, none); Slope (%);
Subregion (LRR).	Lat:		LongDatum:
Soil Map Unit Name	ally some 100	un .	NWI classification.
Are climatic / hydrologic conditions on the site	typical for this time of year	r? Yes No	(If no, explain in Remarks.)
Are Vegetation Soil, or Hydro			Normal Circumstances" present? Yes No
Are Vegetation, Soil, or Hydro	logy naturally prot	olematic? (If ne	eded, explain any answers in Remarks.)
SUMMARY OF FINDINGS - Attach	site map showing	sampling point le	ocations, transects, important features, etc.
Hydrophytic Vegetation Present? Ye Hydric Soil Present? Ye	No X	is the Sampled	
	s_X No	Within a World	165 4 100
Remarks: Vegetation challengin	ng because obt	igates and u	pland species thriving together
VEGETATION			
Tree Stratum (Use scientific names)		Dominant Indicator Species? Status	Dominance Test worksheet:
1			Number of Dominant Species That Are OBL, FACW, or FAC:(A)
2			Total Number of Dominant
3			Species Across All Strata. (B)
A	Total Cover:		Percent of Dominant Species That Are ORL FACW or FAC
Sapling/Shrub Stratum		1	(Ap)
1 Rubys acmeniacus			Prevalence index worksheet:
2			Total % Cover of Multiply by OBL species x 1 =
4			FACW species x 2 =
5			FAC species/ x 3 =
West Street	Total Cover: <u>10</u>		FACU species x 4 =
1. Hypericam perforation	5	./ U₽L	UPL species 2 x 5 = 10
2. Verbaseum theasis	5	1 UPL	Column Totals: (A) (B)
3. Carex co	5		Prevalence Index = B/A =
4. Iris pseudocorus		J OBL	Hydrophytic Vegetation Indicators:
5. Egyisetum laguigatum	30	FACW	Dominance Test is >50% Prevalence Index is ≤3.0°
6. Juneur tenuis		V FAC	Morphological Adaptations (Provide supporting
8. unident Fred grosses	40	<u> </u>	data in Remarks or on a separate sheet)
	Total Cover: 100	E 55 85 H7	Problematic Hydrophytic Vegetation (Explain)
Woody Vine Stratum 1.			Indicators of hydric soil and welland hydrology must
2.			be present.
63.03 MONOGO AN LINA ANALYSIS TONO COND. OWNERS S	Total Cover:		Hydrophytic Vegetation
% Bare Ground in Herb Stratum	% Cover of Biolic Cr	ust	Present? Yes No
remains.			

Sampling Point SP-1

3-6 2,5 Y 4 / 1,5 10 10 YR 3/2 13 7,5 YR 4 / 5 10 YR 3/2 13 7,5 YR 4 / 5 10 YR 3/2 13 7,5 YR 4 / 5 10 YR 3/2 13 7,5 YR 4 / 5 10 YR 3 / 2 13 7,5 YR 4 / 5 10 YR 3 / 2 13 7,5 YR 4 / 5 10 YR 3 / 2 10 YR 3 / 2 13 7,5 YR 4 / 6 10 YR 3 / 2 10 YR 3 / 2 13 7,5 YR 4 / 6 10 YR 3 / 2 10	Remarks
3-6 2,5 Y 4 1/1,5 47 5,5 Y 4 1/5 75 July 2 10 Y 8 3/2 7 5 75 Y 8 1/5 75 July 2 10 Y 8 3/2 7 5 75 Y 8 1/5 75 July 2 10 Y 8 3/2 7 5 75 Y 8 1/5 75 July 2 10 Ju	
Type C=Concentration, D=Depletion, RM=Reduced Matrix 7.5 YR M/6 2 7.5 YR M/6	
Type: C=Concentration, D=Depletion, RM=Reduced Matrix *Location* PL=Pore Lining, RC=Root Chan Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators: Histosol (A1) Sandy Redox (S5) 1 cm Histic Epipedon (A2) Stroped Matrix (S6) 2 cm Histic Epipedon (A2) Stroped Matrix (S6) 2 cm Histic (A3) Loamy Mucky Mineral (F1) Redox Straiffed Layers (A5) (LRR C) Depleted Matrix (F3) Other 1 cm Muck (A9) (LRR D) Redox Dark Surface (F6) Depleted Balox Dark Surface (F6) Depleted Balox Dark Surface (F6) Depleted Dark	
Type: C=Concentration, D=Depletion, RM=Reduced Matrix: *Location: PL=Pore Uning, RC=Root Chan Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators: Histosol (A1) Sandy Redox (S5) 1 cm. Histosol (A2) Stroped Matrix (S6) 2 cm. Histosol (A2) Stroped Matrix (S6) 2 cm. Histosol (A2) Loamy Mucky Mineral (F1) Redox Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) Redox 1 cm. Histosol (A9) (LRR C) Depleted Matrix (F2) Red F strainfed Layers (A5) (LRR C) Depleted Matrix (F3) Other 1 cm. Muck (A9) (LRR D) Redox Dark Surface (F6) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) Indicators Sandy Mucky Mineral (S1) Vernal Pools (F9) Indicators Sendy Gleyed Matrix (S4) Wetland Hydrology Indicators: Wetland Hydrology Indicators: Wetland Hydrology Indicators: Wetland Hydrology Indicators: Wetland Hydrology Indicators (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (S4) Wetland Hydrology Indicators: Wetland Hydrology Indicators: Wetland Hydrology Indicators: Wetland Hydrology Indicators: Wetland Hydrology Indicators (S1) Sandy Gleyed Matrix (S6) Wetland Hydrology Indicators: Wetland Hydrology I	
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Histosol (A2) Black Histo (A3) Black Histo (A3) Loamy Mucky Mineral (F1) Redur Hydrogen Sulfide (A4) Stratified Layers (A5) (LRR C) Depleted Matrix (F3) To Muck (A9) (LRR D) Depleted Below Dark Surface (A11) Depleted Below Dark Surface (A12) Sandy Mucky Mineral (F6) Depleted Below Dark Surface (A12) Sandy Mucky Mineral (F6) Depleted Below Dark Surface (A12) Sandy Mucky Mineral (F6) Depleted Below Dark Surface (A12) Sandy Surface (A12) Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (S4) Loamy Gleyed Matrix (F3) Wetland Hydrology Indicators: Wetland Layer (If present): Type Depth (inches): Pemarks YDROLOGY Wetland Hydrology Indicators: Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Diff Deposits (B2) (Nonriverine) Diff Deposits (B3) (Nonriverine) Presence of Reduced fron (C4) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (B7) Water-Staned Leaves (B9) Indicators Wetland Hydrology Metland Hydrology	loan w/ lots gravels to
Histosol (A1) Histosol (A2) Histosol (A2) Histosol (A2) Black Histo (A3) Black Histo (A3) Loamy Mucky Mineral (F1) Reduct Hydrogen Sulfide (A4) Stratified Layers (A5) (LRR C) Depleted Matrix (F2) 1 cm Muck (A9) (LRR D) Pepleted Below Dark Surface (A11) Depleted Dark Surface (A12) Redox Dark Surface (F6) Depleted Dark Surface (A12) Redox Depressachs (F8) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (S4) Restrictive Layer (if present): Type Depletin (inches) POPUL (A2) Depletin (inches) Popul (inches) Pop	
Histic Epipedon (A2) Stroped Matrix (S6) 2 cm Black Histic (A3) Loamy Mucky Mineral (F1) Redut Hydrogen Sulfde (A4) Loamy Gleyed Matrix (F2) Red F Stratified Layers (A5) (LRR C) Depleted Matrix (F3) Other 1 cm Muck (A9) (LRR D) Red x Depleted Dark Surface (F6) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Red x Depressions (F8) Sandy Mucky Mineral (S1) Vernal Pools (F9) Indicators Sendy Gleyed Matrix (S4) Wethal Pools (F9) Pophl (inches): Hydric Soil Remarks YDROLOGY Vetland Hydrology Indicators: Secondarias YPROLOGY Vetland Hydrology Indicators YPROLOGY YPRO	for Problematic Hydric Soils [‡] :
Black Histic (A3) Loamy Mucky Mineral (F1) Reduction Hydrogen Sulfide (A4) Loamy Gleyed Matrix (F2) Red F Stratified Layers (A5) (LRR C) Depleted Matrix (F3) Other 1 cm Muck (A9) (LRR C) Redox Dark Surface (F6) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Thick Dark Surface (A12) Redox Depressions (F8) Sandy Mucky Mineral (S1) Vernal Pools (F9) Indicators Sendy Gleyed Matrix (S4) Wetland Restrictive Layer (If present): Type Depth (inches): Hydric Soil Remarks: YDROLOGY Vertiand Hydrology Indicators: Secondary Indicators (A12) Salt Crust (B11) Self Crust (B13) Hydric Soil Remarks: Secondary (B14) Self Crust (B13) Self Crust (B	fuck (A9) (LRR C)
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Stratified Layers (A5) (LRR C) 1 cm Muck (A9) (LRR D) Depleted Below Dark Surface (F6) Depleted Below Dark Surface (A12) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (S4) Restrictive Layer (If present): Type Depth (inches): Primary Indicators: Primary Indicators (anny one indicator is sufficient) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Deft Deposits (B2) (Nonriverine) Diff Deposits (B3) (Nonriverine) Diff Deposits (B3) (Nonriverine) Surface Sol Cracks (B6) Recent Iron Reductionin Plowed Soils (C6) Water-Stained Leaves (B5) Field Observations: For face Water Present? Wet and Hydrology Indicators: Secondary Proposition (C4) Surface Water (A1) Secondary Indicators Secondary (B12) Aquatic Invertebrates (B13) Water Table Present? Water-Stained Leaves (B5) Field Observations: Field Observations: For face Water Present? Ves No Depth (inches) Wetland Hydrolog melal inspections), if available WDF V stoff Sate of Sate (A2) Wetland Hydrolog melal inspections), if available WDF V stoff Sate of Sate (A2) Wetland Hydrolog melal inspections), if available	red Vertic (F18)
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Depleted Below Dark Surface (A11)	(Capitalian in Remarks)
Thick Dark Surface (A12)	
Sandy Mucky Mineral (S1) Vernal Pools (F9) Indicators wetland Restrictive Layer (If present): Type	
Sendy Gleyed Matrix (S4) Restrictive Layer (if present): Type Depth (inches)* Primary Indicators: Secondarias Primary Indicators (any one indicator is sufficient) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sodment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Sol Cracks (B6) Inundation Visible on Aerial Imagery (B7) Water-Staned Leaves (B5) Field Observations: Surface Water Present? Ves No Depth (inches) Wetland Hydrolog Bill Inundation Present? Ves No Depth (inches) Wetland Hydrolog Rescribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available	of hydrophytic vegetation and
Type	hydrology must be present
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Vetland Hydrology Indicators: Primary Indicators (any one indicator is sufficient) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sedment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (B7) Water Stained Leaves (B5) Veter Table Present? Ves No Depth (inches) Veter Table Present? Yes No Depth (inches) Includes capillary fringe) escribe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available. WDFW Stoff Staff Crass Capillary France for available and soils for available. WDFW Stoff Staff Crass Capillary fringe)	
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Water Marks (B1) (Nonriverine)	Frift Deposits (B3) (Riverine)
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WOFEN staff state or a feeds during spring runof	
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WETLAND DETERMINATION DATA FORM - Arid West Region

oblicant/Owner VV DI V	(rest C				Sampling Point: 5	
oplicant/Owner: WDFW vestigator(s): TAW, WTK						
andform (hillstope, terrace, etc.):						61· ~Z
ubregion (LRR):				Long.		
oil Map Unit Name:	- A					
e climatic / hydrologic conditions on the site	typical for this time of	year/ Yes	No	(If no, explain in R	emarks.)	40
e Vegetation, Soil, or Hydrol						No
e Vegetation, Soil, or Hydrol						
UMMARY OF FINDINGS – Attach	site map showi	ng samplir	ig point ic	ocations, transects	, important teatu	res, etc
	s No		he Sampled	Area	No X	
	s NoX	_ with	hin a Wetlan	id? Yes	No 17	
Remarks:						
EGETATION						
	Absolu		t Indicator	Dominance Test work	sheet:	
Tee Stratum (Use scientific names)	3500000	ver Species?		Number of Dominant S		743
·				That Are OBL, FACW,	OFFAC	(A)
5.				Total Number of Domir Species Across All Stra	W75.	(B)
	. The same was the same as a	951215133.5.		Opecies Across Air off	110.	(0)
	Total Cover	<		Percent of Dominant S That Are OBL, FACW,		(A/8)
Sapling/Shrub Stratum	10	1		(C)		(,,,,
Rubus armonineus			_	Prevalence Index wor		
				OBL species	Multiply by	
				FACW species		
		Water Zamin		FAC species		
-	Total Cover: 10			FACU species		=413-6
Herb Stratum		, N		UPL species		
Hyperieum perforatu.	n 2		UPL	Column Totals:	(A)3[(B)
	5		UPL		20 1	
Centaurea dittusa			-	0	-50	
. Sotidage anadensis	5		FACU-	Prevalence Index		_
Solidago Ganadensis Gnachalium so	5 5		-	Hydrophytic Vegetati	on Indicators:	
Solidago anadensis Gnaphelium sp Plantage lanceolata	10		-	Hydrophytic Vegetati Dominance Test is	on Indicators:	
Solidage Ganadensis Gasphelium sp Plantage kanceolate Bromus tectorum			-	Hydrophytic Vegetati Dominance Test is Prevalence index	on Indicators: s >50% is <3.0'	porting
Solidago canadensis Gnaphalium sp Plantage lanceolata Bromys tectorum Paa sp	10		FAC.	Hydrophytic Vegetati Dominance Test is Prevalence index Morphological Ada	on Indicators:	
Solidage anadensis Gnaphalium sp Plantage kinceolate Bromus tectorum	10 20 T		-	Hydrophytic Vegetati Dominance Test is Prevalence index Morphological Ada data in Remark	on Indicators: s >50% is ≤3.0° iptations' (Provide sup	et)
Solidage anadensis Gnaphelium sp Plantage lanceolata Bromys tectorum Pa sp Carex sp	10 20 T		FAC.	Hydrophytic Vegetati Dominance Test is Prevalence index Morphological Ada data in Remark Problematic Hydro	on Indicators: s >50% is ≤3.0 inplations (Provide supers or on a separate she ophytic Vegetation) (Ex	et) płain)
Solidage anadensis Gnaphelium sp Plantage lanceolata Bromys tectorum Pa sp Carex sp	10 20 T		FAC.	Hydrophytic Vegetati Dominance Test is Prevalence index Morphological Ada data in Remark Problematic Hydro	on Indicators; 5 > 50% Is ≤3.0° Inplations (Provide supplations as separate she	et) płain)
Setidage anadensis Graphelium sp Flantage lancedate Bromus tectorum Pea sp Carex sp Woody Vine Stratum	Total Cover: '7'		FAC.	Hydrophytic Vegetati Dominance Test is Prevalence index Morphological Ada data in Remark Problematic Hydro Indicators of hydric so be present	on Indicators: s >50% is ≤3.0 inplations (Provide supers or on a separate she ophytic Vegetation) (Ex	et) płain)
Setidage anadensis Graphelium sp Plantage lancedata Bromus fectorum Rea sp Carex sp Voody Vine Stratum	10 20 T		FAC.	Hydrophytic Vegetati Dominance Test is Prevalence index Morphological Ada data in Remark Problematic Hydro Indicators of hydric so be present. Hydrophytic Vegetation	on Indicators: s >50% is ≤3.0 uptations (Provide suplis or on a separate she exphytic Vegetation (Ex	et) płain)
Setidago anadensis Gnaphalium sp Flantage lanceolata Bromys factorum La sp	Total Cover: '7'	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	FAC.	Hydrophytic Vegetati Dominance Test is Prevalence index Morphological Ada data in Remark Problematic Hydro Indicators of hydric so be present. Hydrophytic Vegetation	on Indicators: s >50% is ≤3.0 inplations (Provide supers or on a separate she ophytic Vegetation) (Ex	et) płain)
Solidage anadensis Gnaphelium sp Plantage lanceolata Bromus tectorum Pa sp Carex sp Voody Vine Stratum	Total Cover:	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	FAC.	Hydrophytic Vegetati Dominance Test is Prevalence index Morphological Ada data in Remark Problematic Hydro Indicators of hydric so be present. Hydrophytic Vegetation	on Indicators: s >50% is ≤3.0 uptations (Provide suplis or on a separate she ophytic Vegetation (Ex	et) płain)
Solidage anadensis Gnaphalium sp Flantage lanceolata Bromys factorym Paa sp Carex sp Voody Vine Stratum	Total Cover:	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	FAC.	Hydrophytic Vegetati Dominance Test is Prevalence index Morphological Ada data in Remark Problematic Hydro Indicators of hydric so be present. Hydrophytic Vegetation	on Indicators: s >50% is ≤3.0 uptations (Provide suplis or on a separate she ophytic Vegetation (Ex	et) płain)

Depth Matrix	depth needed to document the indicator or Redox Features	contain the absorbe of indicators.
(inches) Color (moist) %		Loc Texture Remarks
0-4 10483/2 IN	,	Sand Lam
4-6 25 43/2 10	too fine foot to color	lann sand
6-13 2.5 Y 3/2 1:	The state of the s	locary local vel graves - corde
13+ reck c= 5-1	130 HAC 10 2 201	Towns to the ser season
Type: C=Concentration, D=Depletion, Hydric Soil Indicators: (Applicable to Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) (LRR C) 1 cm Muck (A9) (LRR D)	RM=Reduced Matrix **Location: PL=Pone of all LRRs, unless otherwise noted.) Sandy Redox (S5) Stripped Matrix (S6) Loamy Mucky Mineral (F1) Loamy Gleyed Matrix (F2) Depleted Matrix (F3) Redox Dark Surface (F6)	Lining, RC=Root Channel, M=Matrix Indicators for Problematic Hydric Soits*: 1 cm Muck (A9) (LRR C) 2 cm Muck (A10) (LRR B) Reduced Vertic (F18) Red Parent Matenal (TF2) Other (Explain in Remarks)
Depleted Below Dark Surface (A11		
Thick Dark Surface (A12)	Redox Depressions (F8)	
Sandy Mucky Mineral (S1)	Vernal Pools (F9)	Indicators of hydrophytic vegetation and
Sandy Gleyed Matrix (S4)		wetland hydrology must be present.
Type		
Depth (inches):		Hydric Soil Present? Yes No
		Hydric Soil Present? Yes No
Depth (inches):		Hydric Soil Present? Yes No
Depth (inches): Remarks IYDROLOGY		
Depth (inches): Remarks IYDROLOGY Welland Hydrology Indicators:	sufficient)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine)
Depth (inches): Remarks IYDROLOGY Welland Hydrology Indicators: Primary Indicators (any one indicator is		Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine)
Depth (inches): Remarks IYDROLOGY Wetland Hydrology Indicators: Primary Indicators (any one indicator is Surface Water (A1)	sufficient) Salt Crust (B11)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine)
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Depth (inches): Remarks IYDROLOGY Wetland Hydrology Indicators: Primary Indicators (any one indicator is Surface Water (A1) High Water Table (A2) Saturation (A3)	sufficient) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10)
Depth (inches): Remarks IYDROLOGY Walland Hydrology Indicators: Primary Indicators (any one indicator is Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine)	sufficient) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2)
Depth (inches): Remarks IYDROLOGY Welland Hydrology Indicators: Primary Indicators (any one indicator is Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6)	sufficient) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres atong Ln Presence of Reduced Iron (C4) Recent Iron Reduction in Plower	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Thin Muck Surface (C7) Crayfish Burrows (C8)
Depth (inches): Remarks IYDROLOGY Wetland Hydrology Indicators: Primary Indicators (any one indicator is Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery	sufficient) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres atong Ln Presence of Reduced Iron (C4) Recent Iron Reduction in Plower	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Thin Muck Surface (C7) Crayfish Burrows (C8)
Depth (inches): Remarks IYDROLOGY Wetland Hydrology Indicators: Primary Indicators (any one indicator is Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3): (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery Water-Stained Leaves (B9)	sufficient) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres atong Ln Presence of Reduced Iron (C4) Recent Iron Reduction in Plower	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Ving Roots (C3) Thin Muck Surface (C7) Crayfish Burrows (C8) d Soils (C6) Saturation Visible on Aerial Imagery (C9)
Depth (inches): Remarks IYDROLOGY Wetland Hydrology Indicators: Primary Indicators (any one indicator is Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery Water-Stained Leavies (B9) Field Observations:	Sufficient) Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Ling Presence of Reduced Iron (C4) Recent Iron Reduction in Plower (B7) Other (Explain in Remarks)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Thin Muck Surface (C7) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Test (D5)
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URS Routine On-site Wetlands Determination

URS Seattle Office, 1501 4th Ave, Suite 1400, Seattle, Washington 98102 Tele: 206.438.2700

Project Nam Project Loca Applicant/Ov Transect/Plo	tion:	Beebe Springs helan, WA WDFW Plot Location:	PHASE 2		Fieldwork Date County: Investigator(s):	6 March 200- Chelan WIK, JAW		WA
Normal circu Significantly	ımstances ex	ist on site? Ye ypical situation)? Ye	s 🔲 No	□ ☑ ☑ Vegetat	ion			
Normal plot	size/shape?	(radius - trees & shrubs	= 30', herbs = 5		es 🛛 No 🗌			
	Spe	ecies	Ind.	% Raw	Spe	ecies	Ind.	% Raw
			Status	Cover	Plantago lane	13	Status FAC	Cover 25 w
T			1		Tuncus tenvi		FACW=	5 1
r	V-02-17				Juneas serial	4	I MC V	
e								
s				e r				
S Sali	x Exigu	/a	OBL	50				
h Rub	us arme		FACU	5 8				
u	10							
b		nt species that are OBL, fation criteria met?	-					
Comments:	٧	ation criteria met? Regulation is his	unionaled b	on hydroph Soil	ytic species		<u> </u>	
Mannad Cor	ine: CI-I	an greatly so	In luans		Vitrataratic +	balance all Drai	rage Class:	
On Hydric S		Yes No C	2	ap soil type or i		Arrest Dia	rage orass.	
Horizon	Depth	Matrix Color		doximorphic F		Textur	re, Other	-
Δ	0-11	5.5 Y 3/2		-	as time distinct	silty clay bem	10, 01110	
		5,57,572	32 310	y camps	as the anne	ortio Cay south		
11+	Rock ref	u sel						
Histoso	MHistic epiped	on	Gleyed	within 10" bgs		Sandy soils - High org	anic content in su	rface horizon
Sulfidic		200		tric Soils List and	matches profile	Sandy soils - Organic	streaking or pan	
,—	tions within 3°	logs nd rediax within 10° bgs	1 2 1	ng conditions naisture regime		Other:		
The second secon	soll criterion	Control of the Contro	Yes		No 🗆			
Comments:			0.77	g	_			
	*			Hydrold	уду			
Recorded			· >	Discours Comme		1		
Field Data:	Data Availabl	e: Aerial Pho Growing Season?		Stream Gauge:	Other:			
	Inundation:	N/A	Depth to Sal			ree Water: N/A		
Primary Hy	drology Indi		122		Secondary Hydrolog	y indicators:	SCAR MARKAGA	
Inunda:	-		Drift lin	14	Oxidized Root Chann		FAC neutral test	100
_	ed within 12" b d drainage pat		Sedim Water	ent deposits marks	Local soil survey Other:	Ц	Water-stained leav	163
	gy criterion me		Yes	-	No D	- 12		
Comments:	201	s damp but not	saturated	WOF	ov staff indicat	k ponding win	20 ft of	pit occ
				Determin	ation			
Wetland? Cowardin O	Yesi Izse/IHGM OI	lass: FS / LAKE	FRINGE					
Comments:								

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site Beeke Springs Phore 2	76	Steventy Chele	o Samolio	a Date & March 200
			State: WA Samplin	
nvestigator(s): JAW, WTK				
andform (hillslope, terrace, etc.):			7.541	
Subregion (LRR): 8				
01 D		E / / / E	Long	
oil Map Unit Name		V	NWI classification:	
re climatic / hydrologic conditions on the site typical				_
re Vegetation, Soil, or Hydrology	significantly of	disturbed? Are *	Normal Circumstances' present?	Yes No
re Vegetation Soil, or Hydrology	naturally prot	olematic? (If ne	eded, explain any answers in Rem	arks.)
SUMMARY OF FINDINGS - Attach site	map showing	sampling point le	ocations, transects, impoi	tant features, etc.
Hydrophytic Vegetation Present? Yes	No	Is the Sampled		
	No	Within a Wetlan	d? Yes No	
Remarks:				
				•
EGETATION				
	Absolute	Dominant Indicator	Dominance Test worksheet:	
Tree Stratum (Use scientific names.)		Species? Status	Number of Dominant Species	7
1			That Are OBL, FACW, or FAC:	(A)
3			Total Number of Dominant Species Across All Strata:	3 (8)
4.			507-507	- Chizá
	Cover:		Percent of Dominant Species That Are OBL, FACW, or FAC:	100 (A/B)
Sapling/Shrub Stratum	50	1 -01		
1. Salix exigue 2. Rubus armeniacus	20	A 007	Prevalence Index worksheet:	
		TACO	Total % Cover of	
3.			OBL species x	
4 5.			FACW species x FAC species x	
	Cover: 55		FACU species *	
Herb Stratum	COVCI.			5 =
1. Plantago lanceolata		FAC	Column Totals:(A	
2. Juneus tenvis	5	FACW	500	
3			Prevalence Index = B/A =	
			Hydrophytic Vegetation Indica	lors:
5			Dominance Test is >50% Prevalence Index is ≤3.01	
5			Morphological Adaptations	(Provide supporting
8			data in Remarks or on a	
	Cover 30		Problematic Hydrophytic Ve	geration (Explain)
Woody Vine Stratum 1			Indicators of hydric soil and wet	land hydrology must
2			be present.	
	Cover:	020	Hydrophylic Vegetation	200
	Cover of Biolic Cr	ust	Present? Yes	Νσ
Remarks				

•		

Sampling Point _ + 6

Depth Matrix		Features		
(inches) Color (moist) %	Color (moist)	% Type	Loc'	Texture Remarks
	7.5 YR 4/6	2 . C	M	silty clay bon
11 + rock resunt	25			
			-	
			-	
			-	
Type: C=Concentration, D=Depletion, RM=			re Lining, F	
lydric Soil indicators: (Applicable to all L	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			Indicators for Problematic Hydric Soils':
Histosol (A1)	X Sandy Redox			1 cm Muck (A9) (LRR C)
Histic Epipedon (A2)	Stripped Matn			2 cm Muck (A10) (LRR B)
Black Histic (A3) Hydrogen Sulfide (A4)	Loamy Mucky Loamy Gleyed			Reduced Vertic (F18) Red Parent Material (TF2)
Stratified Layers (A5) (LRR C)	Depleted Matr			Other (Explain in Remarks)
1 cm Muck (A9) (LRR D)	Redox Dark S			Other (Explain in Remaiks)
Depleted Bolow Dark Surface (A11)	Depleted Dark	, ,		
Thick Dark Surface (A12)	Redox Depres	, ,		
Sandy Mucky Mineral (S1)	Vernal Pools ((F9)		Indicators of hydrophytic vegetation and
Sandy Gleyed Matrix (S4)				welfand hydrology must be present.
estrictive Layer (if present):	"			
Туре:				./
Depth (inches):	<u> </u>			Hydric Soil Present? Yes X No
VDDOL OCY				
Vetland Hydrology Indicators:				Secondary Indicators (2 or more required)
Vetland Hydrology Indicators: rimary Indicators (any one indicator is suffic				Water Marks (B1) (Riverine)
Vetland Hydrology Indicators: nimary Indicators (any one indicator is suffic Surface Water (A1)	Salt Crust (B			Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine)
Tetland Hydrology Indicators: mmary Indicators (any one indicator is suffic Surface Water (A1) High Water Table (A2)	Salt Crust (B Biotic Crust (B12)		Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine)
Tetland Hydrology Indicators: nimary Indicators (any one indicator is suffic Surface Water (A1) High Water Table (A2) Saturation (A3)	Salt Crust (B Biotic Crust (Aquatic Inves	B12) debrales (B13)		Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10)
Vetland Hydrology Indicators: timary Indicators (any one indicator is suffic Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine)	Salt Crust (B Biotic Crust (Aquatic Inves Hydrogen Su	B12) Rebrates (B13) Iffide Odor (C1)		— Water Marks (B1) (Riverine) — Sediment Deposits (B2) (Riverine) — Drift Deposits (B3) (Riverine) — Drainage Pattems (B10) — Cry-Season Water Table (C2)
Vetland Hydrology Indicators: rimary Indicators (any one indicator is suffice Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sedment Deposits (B2) (Nonriverine)	Salt Crust (B Biotic Crust (Aquatic Inver Hydrogen Su Oxidized Rhi	B12) rtebrates (B13) affide Odor (C1) zospheres along		Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Cry-Season Water Table (C2) Thin Muck Surface (C7)
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URS Routine On-site Wetlands Determination

URS Seattle Office, 1501 4th Ave, Suite 1400, Seattle, Washington 98102 Tele: 206,438.2700

	ebe springs Pha	4 2		Fieldwork Date County:	Chelan	State:	WA
Applicant/Owner.	WDFW	23 1 6	u 6	Investigator(s)	WTK JAW		
Transect/Plot: 59-			south of re	190			
Significantly disturbed (at)			M				
is this a potential Problem	Area? Yes	s No	2				
			Vegetat				
Normal plot size/shape? (es 🖾 No 🗀	anian .	I lad	9/ Daw
Spe	cies	Ind. Status	% Raw Cover	21	secies	Ind. Status	% Raw Cover
		Cidius	0.010	Elyteigia c	e os of	FAC-	20 1
Ţ	Se Lemman	0 00		Equisatum las		FACW	10
r e					thafsus	UPL	10
e				Pog sp			T
S					torna	EA UPL	50
S Ribus Armen	acus .	FACO			ernola	FACU	2
h SALIM Exigue		OBL	10	5			
u		<u> </u>		10 0			
b s							-
Percent of dominant plant	species that are OBL F	ACW FAC+ &	FAC: 21	5 %		✓ = domi	nant species
Comments:	Vegetation is	s not Low	Soil Soil	,	c species	saplings (woody plan	
10 : C T	m gravelly say						
Mapped Series:		_		Vitratorantic	maploxerul L	Orainage Class:	
	Yes No		ap soil type or i			011	
Horizon Depth	Matrix Color	He	doximorphic [reatures		kture, Other	
A 0-2	10483/2 -				sit loon		
B 2-18	2.5 4/2				silt leam		
			15/050112-0	COLOR PROVIDED IN			
			1 - 100 b		□ C-1 - 1-10-b		la co barrara
Histosol/Histic epipedo Sulfidic odor	JO.		within 10" bgs tric Soils List and	d matches profile		organic content in sur inic streaking or pan	race nunzon
Concretions within 3" t	ogs		ing conditions	Trial promo	Other:	and directioning or pair	
Low matrix chroma an	d redox, within 10" bgs	Aquic e	noisture regime				
Is the hydric soil criterion	met?	Yes		No 📜			
Comments:							
	<u> </u>						
			Hydrold	ogy		_	
Recorded Data:	D Assol Phot	171	Stream Gauge	Other I			
Recorded Data Available Field Data:	Growing Season?	los: 🛮 🔻	7	Other:			
Depth of Inundation:	N/A		uration: N/A	Depth to f	ree Water: N/A		
Primary Hydrology Indi		1311111		Secondary Hydrolo	gy Indicators:	Manager Amager	
Inundated		Drift lin		Oxidized Root Chan	nels within 12 bgs	FAC- neutral test	
Saturated within 12" by Wetland drainage patt		Sedime Water	ent deposits	Local soil survey Other:	L.	Water-stained leav	es
Is the hydrology criterion met		Yes		No S			
is the hydrology chemon the	II.	163		140 84			
Comments:							
			Determin	eation			_
Marklando V.			Determin	ation			(4-2-2-
Wetland? Yes Cowardin Class/ HGM Class/	ass: ()()()						
Cowardin Class/ HGM/ Cla	iss: ()[he,)						
Comments:							

WETLAND DETERMINATION DATA FORM - Arid West Region

				Sampling Date 6 March 2
				State: WA Sampling Point SP-7
nvestigator(s): JAW_WTK	100	Section, To	wnship, Ra	nge 727N/R23E/Sec. 20
andform (hillslope, terrace, etc.): _ floodplain		Local relief	(concave,	convex, none): Slope Slope (%): >5
Subregion (LRR):	Lat			Long Datum
oi Map Unit Name: Chelan gravelly s	andy lo	يسر		NWI classification
re climatic / hydrologic conditions on the site typical for the	his time of yea	r? Yes	X No	(If no, explain in Remarks.)
re Vegetation, Soil, or Hydrology				"Normal Circumstances" present? Yes No
re Vegetation, Soil, or Hydrology				eeded, explain any answers in Remarks.)
				ocations, transects, important features, etc
Hydrophytic Vegetation Present? Yes Hydric Soil Present? Yes			e Sampled	
Wetland Hydrology Present? Yes	No_K	With	ni a viena	165
/EGETATION				
Tree Stratum (Use scientific names)		Dominant Species?		Dominance Test worksheet:
1. (Use scientific Harries)				Number of Dominant Species ; That Are OBL, FACW, or FAC (A)
2.				
3				Total Number of Dominant Species Across Alf Strata. (B)
4				
Total Cov	er.			Percent of Dominant Species That Are OBL, FACW, or FAC: (A/B)
Sapling/Shrub Stratum 1. Rubus armeniacus	10		FACV	Prevalence Index worksheet:
2. Salix exists	10	J	ORI	Total % Cover of Multiply by
3.			~00	OBL species x 1 =
4		1-5	A-6-1	FACW species x 2 =
5.			· · · · · · · · · · · · · · · · · · ·	FAC species x 3 = 3
Total Cov	er: 20			FACU species x 4 =
Herb Stratum	2.0	,	-11	UPL species x 5 =
1. Elytrinia repris			EACTO	Column Totals: (A) (B)
2. Equisetum laevigatum 3. Verbascum thapsus	10		UPL	Prevalence Index = B/A = 3.25
4. Bromus tectorum	50		UPL	Hydrophytic Vegetation Indicators:
5. Lastuca serriola	T		FACU	Dominance Test is >50%
6. Poa 30.	T			Prevalence Index is ≤3.01
7			<u> </u>	Morphological Adaptations' (Provide supporting
8				data in Remarks or on a separate sheet)
	er: 100			Problematic Hydrophytic Vegetation (Explain)
Woody Vine Stratum 1.				Indicators of hydric soil and wetland hydrology must be present.
2Total Cov	er			Hydrophytic
NAMED TO STATE AND CONTROL OF STATE OF		-		Vegetation
	er of Biolic C	rust	_	Present? Yes No X
Remarks:				

Sampling Point.

(inches)	Color (moist)	%	Color (moist) % Type Loc	' Texture Remarks
5-3	10462-2	laro		fi tour
2-18	2,5 / 4/2	/92		
2-10				
	-			
ype C=C	oncentration, D=De	pletion, RM=R	reduced Matrix *Location: PL=Pore Linin	rg, RC=Root Channel, M=Matrix
And the same of the same of		and the same of th	RRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils ³ :
Histosol	(A1)		Sandy Redox (S5)	1 cm Muck (A9) (LRR C)
_ Histic Ep	pipedon (A2)		Stripped Matrix (S6)	2 cm Muck (A10) (LRR B)
	stic (A3)		Loamy Mucky Mineral (F1)	Reduced Vertic (F18)
	n Sulfide (A4)		Loamy Gleyed Matrix (F2)	Red Parent Material (TF2)
	Layers (A5) (LRR	C)	Depleted Matrix (F3)	Other (Explain in Remarks)
	ick (A9) (LRR D)	- / 1 4 4 5	Redox Dark Surface (F6)	
	1 Below Dark Surface	ce (A11)	Depleted Dark Surface (F7)	
_	irk Surface (A12) Nucky Mmeral (S1)		Redox Depressions (F8) Vernal Pools (F9)	Indicators of hydrophytic vegetation and
	Gleyed Matrix (S4)		Vernal Pods (F3)	wetland hydrology must be present.
	Layer (if present):			wedning in good of present
Type				Was in the second secon
	ches):		-	Hudric Soil Presont? Yes No
Depth (inc	ches):		-	Hydric Soil Present? Yes No
Depth (inc	GY		-	
Depth (incidentalis)	ches): GY dralagy Indicators			Secondary indicators (2 or more required)
Depth (incoments)	GY fralogy Indicators ators (any one indi-			
Depth (incommarks) (DROLOGICAL AND	GY dralogy Indicators sators (any one indicators)		ent) Salt Crust (B!1)	Secondary indicators (2 or more required)
Depth (incoments) DROLO etland Hyde Surface 1 High Wa	GY dralogy Indicators cators (any one indicators) Water (A1) for Table (A2)		ent)	Secondary indicators (2 or more required) Water Marks (B1) (Riverine)
Depth (inc emasks) (DROLO) (etland Hydenmary India) Surface High Wa Saturatio	GY frelogy Indicators cators (any one indicators Water (A1) for Table (A2) on (A3)	: cator is suffici	ent) Salt Crust (B!1)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Dramage Pattems (B10)
Depth (incommanks) (DROLO) (effand Hydenmary Indice) High Waller Maler Male	GY dralogy Indicators eators (any one indicators Water (A1) for Table (A2) on (A3) arks (B1) (Nonriver	; cator is suffici-	ent) Salt Crust (Bt1) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Dramage Pattems (B10) Cry-Season Water Table (C2)
Depth (incommanks) DROLOGICAL COMMAND	GY drology Indicators ators (any one indicators water (A1) ter Table (A2) on (A3) arks (B1) (Nonriver 1 Deposits (B2) (No	: cator is suffici- ine) nriverine)	ent) Salt Crust (Bl1) Biotic Crust (B12) Aquatic Invertebrates (B13)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Dramage Pattems (B10) Cry-Season Water Table (C2)
Depth (incomments) (DROLOGICAL COMMENTS) (PROLOGICAL COMMENTS) (P	GY frology Indicators ators (any one indi- Water (A1) ter Table (A2) on (A3) arks (B1) (Nonriver if Deposits (B2) (No- osits (B3) (Nonrive	: cator is suffici- ine) nriverine)	ent) Salt Crust (Bt1) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Dramage Pattems (B10) Cry-Season Water Table (C2)
Depth (incidentalis) (DROLO) (etland Hydromary India) Surface (High Waler Maler M	GY frology Indicators ators (any one indi- Water (A1) for Table (A2) on (A3) arks (B1) (Nonriver 1 Deposits (B2) (No- osits (B3) (Nonrive Soil Cracks (B6)	ine) nriverine)	ent) Salt Crust (Bt1)Biotic Crust (B12)Aquatic Invertebrates (B13)Hydrogen Sulfide Odor (C1)Oxidized Rhizospheres along LivingPresence of Reduced fron (C4)Recent fron Reduction in Rowed So	Secondary indicators (2 or more required) Water Mark's (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drawage Pattems (B10) Dry-Season Water Table (C2) Roots (C3) Thin Muck Surface (C7) Crayfish Burrows (C8)
Depth (inc emarks) (DROLOG fettand Hyderimary Indice Surface) High Wal- Saturation Water Mit Sediment Drift Dep- Surface (inundation)	GY frology Indicators sators (any one indi- Water (A1) for Table (A2) on (A3) arks (B1) (Nonriver if Deposits (B2) (No- rosits (B3) (Nonriver Soil Cracks-(B6) on Visible on Aerial	ine) nriverine)	ent) Salt Crust (B!1)Biotic Crust (B12)Aquatic Invertebrates (B13)Hydrogen Sulfide Odor (C1)Oxidized Rhizospheres along LivingPresence of Reduced Iron (C4)	Secondary indicators (2 or more required) Water Mark's (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Dramage Pattems (B10) Dry-Season Water Table (C2) Roots (C3) Thin Muck Surface (C7) Crayfish Burrows (C8)
Depth (incomments) (DROLO) (effand Hyder Surface Maler Ma	GY dralogy Indicators eators (any one indicators valer (A1) for Table (A2) on (A3) arks (B1) (Nonriver if Deposits (B2) (No osits (B3) (Nonrive Soil Cracks (B6) on Visible on Aerial larined Leaves (B9)	ine) nriverine)	ent) Salt Crust (Bt1)Biotic Crust (B12)Aquatic Invertebrates (B13)Hydrogen Sulfide Odor (C1)Oxidized Rhizospheres along LivingPresence of Reduced fron (C4)Recent fron Reduction in Rowed So	Secondary indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Dramage Pattems (B10) Dry-Season Water Table (C2) Roots (C3) Thin Muck Surface (C7) Crayfish Burrows (C8) Saturation Visible on Aenal Imagery (C9)
Depth (incomments) (DROLOGICATION CONTROLOGICATION CONTR	GY dralogy Indicators cators (any one indicators water (A1) for Table (A2) on (A3) arks (B1) (Nonriver if Deposits (B2) (No osits (B3) (Nonrive Soil Cracks (B6) on Visible on Aerial arined Leaves (B9) vations:	ine) nriverine) rine) imageny (B7)	Salt Crust (BI1) Salt Crust (BI1) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Presence of Reduced Iron (C4) Recent Iron Reduction in Plowed Soil Other (Explain in Remarks)	Secondary indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Dramage Pattems (B10) Cry-Season Water Table (C2) Thin Muck Surface (C7) Crayfish Burrows (C8) Saturation Visible on Aenal Imagery (C9) Shallow Aquitard (D3)
Depth (incoments) /DROLO fetland Hydenmary Indee High Water May Saturation Water May Sediment Drift Dep Surface Street Inundation Water Street efd Observ	GY findingy Indicators cators (any one indicators water (A1) for Table (A2) on (A3) arks (B1) (Nonriver 1 Deposits (B2) (No rosits (B3) (Nonriver Soil Cracks (B6) on Visible on Aerial arined Leaves (B9) rations; or Present?	ine) nriverine) rine) imagery (B7)	Salt Crust (Bt1) — Salt Crust (Bt1) — Biotic Crust (B12) — Aquatic Invertebrates (B13) — Hydrogen Sulfide Odor (C1) — Oxidized Rhizospheres along Living — Presence of Reduced Iron (C4) — Recent Iron Reduction in Plowed Soi — Other (Explain in Remarks)	Secondary indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Dramage Pattems (B10) Cry-Season Water Table (C2) Thin Muck Surface (C7) Crayfish Burrows (C8) Saturation Visible on Aenal Imagery (C9) Shallow Aquitard (D3)
Depth (incoments) /DROLO fetland Hydenmary Indee High Water May Saturation Water May Sediment Drift Dep Surface Street Inundation Water Street efd Observ	GY findingy Indicators cators (any one indicators water (A1) for Table (A2) on (A3) arks (B1) (Nonriver 1 Deposits (B2) (No rosits (B3) (Nonriver Soil Cracks (B6) on Visible on Aerial arined Leaves (B9) rations; or Present?	ine) nriverine) rine) imagery (B7)	Salt Crust (Bl1) — Salt Crust (Bl1) — Biotic Crust (B12) — Aquatic Invertebrates (B13) — Hydrogen Sulfide Odor (C1) — Oxidized Rhizospheres along Living — Presence of Reduced Iron (C4) — Recent Iron Reduction in Plowed Sol — Other (Explaint in Remarks) — Depth (inches) — Depth (inches)	Secondary indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Dramage Pattems (B10) Cry-Season Water Table (C2) Thin Muck Surface (C7) Crayfish Burrows (C8) Saturation Visible on Aenal Imagery (C9) Shallow Aquitard (D3)
Depth (inclements) POROLOGICAL AND	GY dralogy Indicators cators (any one indicators cators (any one indicators cators (any one indicators (Water (A1) for Table (A2) on (A3) arks (B1) (Nonriver if Deposits (B2) (No cosits (B3) (Nonriver if Deposits (B3) (Nonriver if Depo	ine) nriverine) rine) imagery (B7) es No es No	Salt Crust (Bt1) Salt Crust (Bt1) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Presence of Reduced Iron (C4) Recent Iron Reduction in Rowed Soi Other (Explain in Remarks) Depth (inches) Depth (inches) Depth (inches)	Secondary indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drimage Pattems (B10) Cry-Season Water Table (C2) Thin Muck Surface (C7) Crayfish Burrows (C8) Saturation Visible on Aenal Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Tesk (D5)
Depth (inclements) POROLOGICAL AND	GY dralogy Indicators cators (any one indicators cators (any one indicators cators (any one indicators (Water (A1) for Table (A2) on (A3) arks (B1) (Nonriver if Deposits (B2) (No cosits (B3) (Nonriver if Deposits (B3) (Nonriver if Depo	ine) nriverine) rine) imagery (B7) es No es No	Salt Crust (Bl1) Biotrc Crust (Bl2) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Presence of Reduced Iron (C4) Recent Iron Reduction in Plowed Soil Other (Explaint in Remarks)	Secondary indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drimage Pattems (B10) Cry-Season Water Table (C2) Thin Muck Surface (C7) Crayfish Burrows (C8) Saturation Visible on Aenal Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Tesk (D5)
Depth (incoments) PROLOGICATION Fertland Hydromary Indice Surface Water May Sediment Doit Dep Surface Su	GY dralogy Indicators cators (any one indicators cators (any one indicators cators (any one indicators (Water (A1) for Table (A2) on (A3) arks (B1) (Nonriver if Deposits (B2) (No cosits (B3) (Nonriver if Deposits (B3) (Nonriver if Depo	ine) nriverine) rine) imagery (B7) es No es No	Salt Crust (Bt1) Salt Crust (Bt1) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Presence of Reduced Iron (C4) Recent Iron Reduction in Rowed Soi Other (Explain in Remarks) Depth (inches) Depth (inches) Depth (inches)	Secondary indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drimage Pattems (B10) Cry-Season Water Table (C2) Thin Muck Surface (C7) Crayfish Burrows (C8) Saturation Visible on Aenal Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Tesk (D5)
Depth (inclements) POROLOGICAL AND	GY dralogy Indicators cators (any one indicators cators (any one indicators cators (any one indicators (Water (A1) for Table (A2) on (A3) arks (B1) (Nonriver if Deposits (B2) (No cosits (B3) (Nonriver if Deposits (B3) (Nonriver if Depo	ine) nriverine) rine) imagery (B7) es No es No	Salt Crust (Bt1) Salt Crust (Bt1) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Presence of Reduced Iron (C4) Recent Iron Reduction in Rowed Soi Other (Explain in Remarks) Depth (inches) Depth (inches) Depth (inches)	Secondary indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drimage Pattems (B10) Cry-Season Water Table (C2) Thin Muck Surface (C7) Crayfish Burrows (C8) Saturation Visible on Aenal Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Tesk (D5)
Depth (incoments) PROLOGICATION Fertland Hydromary Indice Surface Water May Sediment Doit Dep Surface Su	GY dralogy Indicators cators (any one indicators cators (any one indicators cators (any one indicators (Water (A1) for Table (A2) on (A3) arks (B1) (Nonriver if Deposits (B2) (No cosits (B3) (Nonriver if Deposits (B3) (Nonriver if Depo	ine) nriverine) rine) imagery (B7) es No es No	Salt Crust (Bt1) Salt Crust (Bt1) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Presence of Reduced Iron (C4) Recent Iron Reduction in Rowed Soi Other (Explain in Remarks) Depth (inches) Depth (inches) Depth (inches)	Secondary indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drimage Pattems (B10) Cry-Season Water Table (C2) Thin Muck Surface (C7) Crayfish Burrows (C8) Saturation Visible on Aenal Imagery (C9) Shallow Aquitard (D3) FAC-Neutral Tesk (D5)

URS Routine On-site Wetlands Determination

URS Seattle Office, 1501 4th Ave, Suite 1400, Seattle, Washington 98102 Tele: 206.438.2700

Project Name: Broke Springs Plan Project Location: Chala.	42			Fieldwork Date County:	e: March	State:	AWA	
Applicant/Owner. WDFW		100		Investigator(s		TX	447	
		of wet	hand					
Normal circumstances exist on site? Yes	☑ No							
Significantly disturbed (atypical situation)? Yes		N						
Is this a potential Problem Area? Yes No 🖸								
Vegetation								
Normal plot size/shape? (radius - trees & shrubs =			Yes			1		
Species	Ind.	% Raw		S	pecies	Ind.	% Raw Cover	
	Status	Cover	-	Melilatus	-11	Status	20	
Т	7 10 11 11 11					FAC	30	
r	1			4	nelolata	PAC	25	
e	1		H	Carex sp			1 2	
s		_	e	Unidentified a		_	20	
· S			b	Oniden'ilies 9	CP1162	1	20	
h			S					
r.	+		1					
b		30 _ 0						
s		2						
Percent of dominant plant species that are OBL, Fa	ACW, FAC+, & F	AC:	50 No) 7 ₆		✓ = dorr s saplings (woody pla	vinant species	
Mapped Series: Chalam gravelly soul		Taxonomy			Hapluserall	Drainage Class:		
On Hydric Soils List? Yes No	Confirmed ma							
Horizon Depth Matrix Color								
0-9 10 YR3/2	annit get color very few food, fine Sandy loan							
9-14 10 YR3/2	<u> </u>				sandy learn	gravels and o	cobbles	
14+ rock return					A	7.	4 inches	
	1 11 11 11 11 11 11			A Service		12000-00		
Histosol/Histic epipedon		within 10" bg		CIPI ES	The second secon	h organic content in su	urface borizon	
Sulfidic odor On Hydric Soils List and matches profile Sandy soils - Organic streaking or pan								
Concretions within 3" bgs Reducing conditions Other: Low matrix chroma and redox, within 10" bgs Aquic moisture regime								
Is the hydric soil criterion met?				ু হৈ				
	100							
Camments:								
<u></u>		Hydr	oloc	IV			······································	
Recorded Data:		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
Recorded Data Available: Aerial Photo	s: 🔲 S	tream Gau	ge:	Other:				
Field Data: Growing Season?	Yes D	No						
Depth of Inundation: NA	Depth to Satu	ration:	NIF		Free Water: N/A			
Primary Hydrology Indicators: Secondary Hydrology Indicators:								
Saturated within 12" bgs	Inundated Drift lines Oxidized Root Channels within 12" bgs FAC- neutral test Saturated within 12" bgs Sediment deposits Local soil survey Water-stained leaves							
Wetland drainage pattern	Water marks Other:					Travel biantiful feu	150	
Is the hydrology criterion met?	Yes		No					
Comments:		Section		30000				
		Determ	ina	tion				
Wetland? Yes ☐ No 🖺								
Cowardin Class/ HGM Class: Value								
Commonle								
comments: open area south of willow / blockberry thicket middle of beach								
open arta couth of	Allew / hlee	5 3+1 FY	This	medale of	brach			

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site Beebe Sperras Phase 2 Cay/County.	Chelan Sampling Date: 6 March 2007			
	State: WA Sampling Point 19-8			
Investigator(s): WTK, JAW Section, Township, Rai				
Landform (hillslope, terrace, etc.): Local relief (concave, o				
	Long Datum:			
24	NWI classification:			
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _	(If no, explain in Remarks)			
Are Vegetation Soil, or Hydrology significantly disturbed? Are	"Normal Circumstances" present? Yes No			
Are Vegetation, Soil, or Hydrology naturally problematic? (If ne	eded, explain any answers in Remarks)			
SUMMARY OF FINDINGS - Attach site map showing sampling point le	ocations, transects, important features, etc.			
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Remarks: Yes No Is the Sampled within a Wetland Wetland Hydrology Present?	×			
VEGETATION				
Tree Stratum (Use scientific names) Absolute Dominant Indicator We Gover Species? Status	Dominance Test worksheet:			
Tree Stratum (Use scientific names) % Cover Species? Status 1	Number of Dominant Species That Are OBL, FACW, or FAC (A)			
2	- · · · · · · · · · · · · · · · · · · ·			
3	Total Number of Dominant Species Across All Strata: (B)			
4	Descript of Deminant Species			
Sapling/Shrub Stratum	That Are OBL, FACW, or FAC			
1	Prevalence Index worksheet:			
2	Total % Cover of Multiply by			
3	OBL species x 1 =			
5	FAC species x 2 =			
Total Cover:	FACU species x 4 =			
1. Metiletus alba 20 V FACU	UPL species x 5 =			
2. Plantago lanceolata 30 J FAC	Column Totals: (A) (B)			
3. Carex Sp 25	Prevalence Index = 8/A = 3.5			
4.	Hydrophytic Vegetation Indicators:			
5. unidentifiable grasses 20	Dominance Test is >50%			
6	Prevalence Index is ≤3.0`			
7	Morphological Adaptations1 (Provide supporting data in Remarks or on a separate sheet)			
8	Problematic Hydrophytic Vegetation¹ (Explain)			
Woody Vine Stratum	Indicators of hydric soil and wetland hydrology must			
2	be present.			
Total Cover:	Hydrophytic Vegetation			
% Bare Ground in Herb Stratum	Present? Yes No			
Remarks:				
	2			

Depth Matrix (inches) Color (moist) %	Redox Features Color (moist) % Type Loc*	Texture Remarks
0-9 10483/2 10	to Sarah and Fair to color M	
9-14 10483/2 100		
14 + rock refusal		to 4 incly
		and a state of the
Type: C=Concentration, D=Depletion, RN		
lydric Soil Indicators: (Applicable to al		Indicators for Problematic Hydric Soils*:
Histosol (A1)	Sandy Redox (S5)	1 cm Muck (A9) (LRR C)
Histic Epipedon (A2) Black Histic (A3)	Stripped Matrix (S6) Loamy Mucky Mineral (F1)	2 cm Muck (A10) (LRR B) Reduced Vertic (F18)
Hydrogen Suffide (A4)	Loamy Gleyed Matrix (F2)	Red Parent Material (TF2)
Stratified Layers (A5) (LRR C)	Depleted Matrix (F3)	Other (Explain in Remarks)
1 cm Muck (A9) (LRR D)	Redox Dark Surface (F6)	
Depleted Below Dark Surface (A11)	Depleted Dark Surface (F7)	
Thick Dark Surface (A12)	Redox Depressions (F8)	
Sandy Mucky Mineral (S1)	Vernal Pools (F9)	Indicators of hydrophytic vegetation and
_ Sandy Gleyed Matrix (S4)		welland hydrology must be present.
testrictive Layer (if present):		
Турс		1.
Depth (inches):		Hydric Soil Present? Yes No X
Depth (inches):		Hydric Soil Present? Yes No X
Depth (inches):		
Depth (inches): Permarks: YDROLOGY Vetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Depth (inches): Pemarks: YDROLOGY Vetland Hydrology Indicators: rimary Indicators (any one indicator is suff	ficient)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine)
Depth (inches): Pemarks: YDROLOGY Vetland Hydrology Indicators: rimary Indicators (any one indicator is suff Surface Water (A1)	Salt Crust (B11)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposts (B2) (Riverine)
Depth (inches): Pemarks: YDROLOGY Velland Hydrology Indicators: rimary Indicators (any one indicator is suff Surface Water (A1) High Water Table (A2)	Salt Crust (B11) Biotic Crust (B12)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Unit Deposits (B3) (Riverine)
Pemarks YDROLOGY Velland Hydrology Indicators: rimary Indicators (any one indicator is suff Surface Water (A1) High Water Table (A2) Saturation (A3)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Onth Deposits (B3) (Riverine) Dealrage Patterns (B10)
Depth (inches): Pemarks: YDROLOGY Vetland Hydrology Indicators: rimary Indicators (any one indicator is suff Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Onth Deposits (B3) (Riverine) Distrage Patterns (B10) Ory-Season Water Table (C2)
Pepth (inches): Pemarks: YDROLOGY Vetland Hydrology Indicators: Trimary Indicators (any one indicator is suff Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine)	 Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro 	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Unit Deposits (B3) (Riverine) Drainage Patterns (B10) Ory-Season Water Table (C2) Octs (C3) Thin Muck Surface (C7)
Depth (inches): Pemarks: YDROLOGY Vetland Hydrology Indicators: rimary Indicators (any one indicator is suff Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Dnft Deposits (B3) (Nonriverine)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Unit Deposits (B3) (Riverine) Drainage Patterns (B10) Ory-Season Water Table (C2) Ithin Muck Surface (C7) Crayfish Burrows (C8)
Pemarks: YDROLOGY Vetland Hydrology Indicators: rimary Indicators (any one indicator is suff Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Dnft Deposits (B3) (Nonriverine) Surface Soil Cracks (B6)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recent Iron Reduction in Plowed Soils	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Infl Deposits (B3) (Riverine) Drainage Patterns (B10) Ory-Season Water Table (C2) Ithin Muck Surface (C7) Crayfish Burrows (C8) (C6) Saturation Visible on Aerial Imagery (C8)
Pemarks: YDROLOGY Vetland Hydrology Indicators: Immary Indicators (any one indicator is suff Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Dnft Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (E	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recent Iron Reduction in Plowed Soils	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Draft Deposits (B3) (Riverine) Draftrage Patterns (B10) Ory-Season Water Table (C2) Ithin Muck Surface (C7) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aguitand (D3)
Pemarks: YDROLOGY Vetland Hydrology Indicators: Immary Indicators (any one indicator is suff Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Dnft Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (E	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recent Iron Reduction in Plowed Soils	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Infl Deposits (B3) (Riverine) Dratrage Patterns (B10) Ory-Season Water Table (C2) Ithin Muck Surface (C7) Crayfish Burrows (C8) (C6) Saturation Visible on Aerial Imagery (C8)
Pemarks: YDROLOGY Vetland Hydrology Indicators: Inimary Indicators (any one indicator is suff Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Dnft Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (E Water-Stained Leaves (B9)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recent Iron Reduction in Plowed Soils Other (Explain in Remarks)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Draft Deposits (B3) (Riverine) Draftrage Patterns (B10) Ory-Season Water Table (C2) Ithin Muck Surface (C7) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aguitand (D3)
Permarks: Permary Indicators (any one indicator is suffer a suffer (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (E) Water-Stained Leaves (B9) ield Observations: urface Water Present? Yes	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recent Iron Reduction in Plowed Soils Other (Explain in Remarks)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Draft Deposits (B3) (Riverine) Draftrage Patterns (B10) Ory-Season Water Table (C2) Ithin Muck Surface (C7) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aguitand (D3)
Pepth (inches): Pemarks:	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recent Iron Reduction in Plowed Soils Other (Explain in Remarks) No X Depth (inches)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Draft Deposits (B3) (Riverine) Draftrage Patterns (B10) Ory-Season Water Table (C2) Ithin Muck Surface (C7) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9) Shallow Aguitand (D3)
Per	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recent Iron Reduction in Plowed Soils Other (Explain in Remarks) No X Depth (inches)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Until Deposits (B3) (Riverine) Distringe Patterns (B10) Ory-Season Water Table (C2) Ithin Muck Surface (C7) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Agutard (D3) FAC-Neutral Test (D5)
Permarks: Permary Indicators (any one indicator is suffermary Indicators (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Duft Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (EWater-Stained Leaves (B9) Field Observations: Furface Water Present? Permarks: Pe	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recent Iron Reduction in Plowed Soils Other (Explain in Remarks) No X Depth (inches) No X Depth (inches) Well	Secondary Indicators (2 or more required)
Permarks: Permary Indicators (any one indicator is suffermary Indicators (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Duft Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (EWater-Stained Leaves (B9) Field Observations: Furface Water Present? Permarks: Pe	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recent Iron Reduction in Plowed Soils Other (Explain in Remarks) No X Depth (inches)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Unit Deposits (B3) (Riverine) Distrage Patterns (B10) Dry-Season Water Table (C2) Octs (C3) Thin Muck Surface (C7) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aguitard (D3) FAC-Neutral Test (D5)
Per	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recent Iron Reduction in Plowed Soils Other (Explain in Remarks) No X Depth (inches) No X Depth (inches) Well	Secondary Indicators (2 or more required)
Permarks: Permary Indicators (any one indicator is suffermary Indicators (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Duft Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (EWater-Stained Leaves (B9) Field Observations: Furface Water Present? Permarks: Pe	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recent Iron Reduction in Plowed Soils Other (Explain in Remarks) No X Depth (inches) No X Depth (inches) Well	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Unit Deposits (B3) (Riverine) Distrage Patterns (B10) Dry-Season Water Table (C2) Octs (C3) Thin Muck Surface (C7) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aguitard (D3) FAC-Neutral Test (D5)
Per	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recent Iron Reduction in Plowed Soils Other (Explain in Remarks) No X Depth (inches) No X Depth (inches) Well	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Unit Deposits (B3) (Riverine) Distrage Patterns (B10) Dry-Season Water Table (C2) Octs (C3) Thin Muck Surface (C7) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery (C9 Shallow Aguitard (D3) FAC-Neutral Test (D5)
Per	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recent Iron Reduction in Plowed Soils Other (Explain in Remarks) No X Depth (inches) No X Depth (inches) Well	Secondary Indicators (2 or more required)

URS Routine On-site Wetlands Determination

JRS Seattle Office, 1501 4" Ave. Suite 1400, Seattle, Washington 98102 Tele: 206.438.2700

	014 Ave, Suite 14co, Seati	Fieldwork Date: County: Investigator(s):	5 March 200 Chelen JAW WTK	7	WA
Normal circumstances exist on site? Yes	s 🖸 No 🔲				
Significantly disturbed (atypical situation)? Yes					
Is this a potential Problem Area? Yes					
	Vegetati				
Normal plot size/shape? (radius - trees & shrubs :					
Species	Ind. % Raw	Spec	ies	Ind.	% Raw
	Status Cover	Tat 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TO SHARE	Status	Cover
T		Phalacis acundin		FACW	70
r			10545	UPL	20
0	+	Equisetum aru	tore	FAC	5
s	e				
	r				
Rybys armeniacus	FACU 25 V b				K 101-2-4
r	s			3	
u Crathans so	- 7			action of the	
b Certain Frice	FACW 5 V			C 992	V
Percent of dominant plant species that are OBL, F	ACM EAC EAC	10		1	inant species
Is the hydrophytic vegetation criteria met?		lo 🖾	e also includes saplin		
	162	io la	= also includes sapini	gs (woody pia	rns <20 m Janj
Comments:					
	Call				
	Soil	et a	1 1 1		
Mapped Series: Chalan gravelly san	10.700		Haylakerall Draina	ige Class:	
On Hydric Soils List? Yes No	Confirmed map soil type or in	clusion:			
Horizon Depth Matrix Color	Redoximorphic F	eatures	Texture	, Other	
A. 10-9 107R4/2	-	5	and learn		
A. 9-16 104R4/2	few fine trafaint!			ed Avade	ol.
	Transfer I III		201	7 7 100	-
Histosol/Histic epipedon	Gleyed within 10" bgs		Coordy soils that arrass	do content is a	dan bains
Sulfidic odor	On Hydric Soils List and	matrhes stofile	Sandy soils - High organ Sandy soils - Organic st		made nonzon
Concretions within 3" bgs	Aeducing conditions	inatores prome	Other:	reaking or pan	
Low matrix chicrns and redox, within 10" bgs	Aquic moisture regime	_	V.1101.		
Is the hydric soil criterion met?	Yes N	lo 🔝			
- 150 ACCESS	_				
Comments:					
	Hydrolo	av			
Recorded Data:	11,01010	31		_	
Recorded Data Available: Aerial Phot	os: Stream Gauge:	Other:			
Field Data: Growing Season?	Yes D No	U Omor.			
Depth of Inundation:	Depth to Saturation: N/A	Depth to Free	Water. N/A		
Primary Hydrology Indicators:		Secondary Hydrology			
Inundated	Drift lines	Oxidized Root Channels		C- neutral test	
Saturated within 12" Egs	Sediment deposits	Local soil survey	☐ Wa	ater-stained lea	Ves
Wetland drainage pattern	Water marks	Other:	8038		
Is the hydrology criterion met?	Yes 🔲 N	0			
Comments near top of been					
Contrad Chica.	Sec. 15. photogrammer examination				
	Determina	tion	_		
Wetland? Yes □ No ☑					
Cowardin Class/ HGM Class					
Containin Class. HOW Class.					
Comments					

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site. Beebe Springs	Phase 2	Sty/County.	Chel	Sampling Date: 6 March
Applicant/Owner: WDFW				11 (1)
Investigator(s): JAW WTK				
				convex, none): _Convex Slope (%): _ ~ /
				Long Datum:
Soil Map Unit Name:				NWI classification PSS/EM
Are climatic / hydrologic conditions on the site I	typical for this time of yea	ar? Yes		
Are Vegetation, Soil, or Hydrok	ogysignificantly (disturb e d?	Are *	"Normal Circumstances" present? Yes No
Are Vegetation, Soil, or Hydrok				eeded, explain any answers in Remarks)
SUMMARY OF FINDINGS – Attach	site map showing	sampling	point le	ocations, transects, important features, etc
	No ×		Sampled	X
Wetland Hydrology Present? Yes Remarks:	No_X_	Willin	i a vvulla	107 105 NO
VEGETATION	<u> </u>			
San V san S	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Use scientific names)		Species?		Number of Dominant Species That Are OBL_FACW. or FAC: (A)
1				That Are OBL, FACW, or FAC: (A)
3.				Total Number of Dominant Species Across All Strata. (B)
4				
1200 A.C. (1200 - 1200	Total Cover:			Percent of Dominant Species That Are OBL. FACW, or FAC: 50 (A/B)
1. Ruous acmeniacus	25	V	FACU	Prevalence Index worksheet;
			1 Aco	Total % Cover of Multiply by
3. Cornus sericea			Spark)	OBL species x 1 =
4				FACW species x 2 =
5				FAC species x 3 =
Herb Stratum	Total Cover:			FACU species x 4 =
1. Phataris ar unsinaceo		J	FACW	UPL species x5=
2 Verbaseus thapsis	20	J	UPL	Column Totals: S (A) 1(a (B)
3. Equisetum arvense			FAC	Prevalence Index = B/A = 3, 2
4				Hydrophytic Vegetation Indicators:
5				Dominance Test is >50%
6				Prevalence Index is ≤3.0°
7		2		Morphological Adaptations' (Provide supporting data in Remarks or on a separate sheet)
8		-		Problematic Hydrophytic Vegetation (Explain)
Woody Vine Stratum	Total Cover: 15			
1				Indicators of hydric soil and wetland hydrology must
2				be present.
9/ Bara Crayed in Harb Stratum	Total Cover:			Hydrophytic Vogetation Present? Yes No X
% Bare Ground in Herb Stratumi	_ % Cover of Biotic Cr	1051		Present? Yes No X
Kumaras.				
Vegetation dami	ands include F	ACW an	pvv Ina	beside UPL species
J. J	William Miles And I I	1)	

	•		
~ (ıĸ	

Sampling Point 39-9

inches) Color (moist) %	Color (moist) % Type Loc	Texture Remarks
0-9 10-12-1/2 100		Salylvane
9-16 104/2 100		
ype: C=Concentration, D=Depletion, Ridric Soil Indicators: (Applicable to a Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stralified Layers (A5) (LRR C) 1 cm Muck (A9) (LRR D) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sendy Mucky Mineral (S1)	M=Reduced Matrix *Location: PL=Pore Lining.	RC=Root Channel, M=Matrix Indicators for Problematic Hydric Soils*: 1 cm Muck (A9) (LRR C) 2 cm Muck (A10) (LRR B) Reduced Vertic (F18) Red Parent Material (TF2) Other (Explain in Remarks)
Sendy Gleyed Matrix (S4)	Vernal Pools (F3)	welland hydrology must be present.
strictive Layer (if present):		walled try workeyy most are present.
Туре		
Depth (inches):		Hydric Soil Present? Yes No
emarks		1
DROLOGY		Secondary Indicators (2 or more required)
ofland Hydrology Indicators:		Secondary Indicators (2 or more required)
offand Hydrology Indicators: rimary Indicators (any one indicator is su	Control of the Contro	Water Marks (B1) (Riverine)
offand Hydrology Indicators: rimary Indicators (any one indicator is su Surface Water (A1)	Salt Crust (B11)	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine)
offand Hydrology Indicators: imary Indicators (any one indicator is su Surface Water (A1) High Water Table (A2)	Saft Crust (B11) Biotic Crust (B12)	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine)
offand Hydrology Indicators: rimary Indicators (any one indicator is su Surface Water (A1) High Water Table (A2) Saturation (A3)	Saft Crust (B11) Biotic Crust (B12) Aquatic invertebrates (B13)	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Chainage Patterns (B10)
offand Hydrology Indicators: rimary Indicators (any one indicator is su Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine)	Saft Crust (B11) Biotic Crust (B12) Aquatic invertebrates (B13) Hydrogen Sulfide Odor (C1)	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Chainage Patterns (B10) Dry-Season Water Table (C2)
offand Hydrology Indicators: imary Indicators (any one indicator is su Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine	Saft Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Crainage Patterns (B10) Dry-Season Water Table (C2) ots (C3) Thin Muck Surface (C7)
offland Hydrology Indicators: rimary Indicators (any one indicator is su Surface Water (A1) High Wafer Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine)	Saft Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4)	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Chainage Patterns (B10) Dry-Season Water Table (C2) ots (C3) Thin Muck Surface (C7) Crayfish Burrows (C8)
offland Hydrology Indicators: rimary Indicators (any one indicator is su Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soit Cracks (B6)	Salf Crust (B11) Biotic Crust (B12) Aquatic invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living Ro Presence of Reduced Iron (C4) Recemb Iron Reduction in Plowed Soils (Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Etrainage Patterns (B10) Dry-Season Water Table (C2) cts (C3) Thirt Muck Surface (C7) Crayfish Burrows (C8) (C6) Saturation Visible on Aerial Imagery (C9)
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URS Routine On-site Wetlands Determination

URS Seattle Office, 1501 4" Ave, Suite 1400, Seattle, Washington 98102 Tele: 206.438.2700

roject Name: Eeche Springs Thus roject Location: Chrlon WA pplicant/Owner: W DSW	-2		Ge 7	Fieldwork Date: County: Investigator(s):	Chelan JAW WTK	State:	wΑ
ransect/Plot: SP-10 Plot Location: lormal circumstances exist on sile? Ye ignificantly disturbed (atypical situation)? Ye is this a potential Problem Area? Ye	s 🔲 No	☐ ⊠ Vegeta	atio				-
lormal plot size/shape? (radius - trees & shrubs	- 30' herbs = 5'/ c		Yes				
Species	Ind.	% Raw	10.		ecies	Ind.	% Raw
	Status	Cover		yl v med temp		Status	Cover
					ceulata	FAC	20
				Verbascom 1	hopius	UPL	10
				Agrostis sp		FAC	25
			H	and the second s	VERSE	FAC	T -
			r	Cenothera sp		-	10
Rubus armentacus	FACU	30	b	Carex sp.	1-1-1		T
Alays rubia	FAC	15	3	Juneus To	tenuis		5
Salix exigua	OBL	10	-		FAMILY STATE	-	
		= 15					
Comments:		So	il			_	
tapped Series: Chelan gravelly can	. Januar		_	lite torrandic	had would Dra	inage Class:	
On Hydric Soils List? Yes No	Confirmed map		100		LOVEL MI	mage Olasa.	
Horizon Depth Matrix Color		oximorphic	_		Toxtu	re, Other	
A 1-3 10 YRZ/Z	TAGOL	JAHODIN		satures		is, Olliei	
B 3-12 25 Y 3/2	-	oo feir	k.	to color 1	sill loan	coluble	e (
12+ rock ++ fus-1	very few	oo feir	0	le Celor /	cavy grave and	Chank	Sandy
Histosol/Histic epipedon Sulfidic odor Concretions within 3" bgs Low matrix chroma and redox, within 10" bgs	On Hydric Reducing	ithin 10" bgs c Soils List a conditions isture regim	and r	matches profile	Sandy soils - High ord Sandy soils - Organic Other:		irlace herizo
s the hydric soil criterion met? Comments:	Yes		N	lo 🔯			
		Hydro	olo	ду			
Recorded Data: Recorded Data Available: Aerial Pho	otows: 🔲 SJ	ream Gaug	ge:	Other:			
ield Data: Growing Season	Yes 🖂	No		12774			
Depth of Inundation: N/A	Depth to Satur	ation: -		Depth to F			1900
rimary Hydrology Indicators:			9	Secondary Hydrolog		F.W.O	
Inundated Saturated within 12" bgs	Drift lines	t. deposits		Oxidized Root Channe Local soil survey	as within 1/2 10gs	FAC neutral lest Water-stained lea	vas.
Wedand drainage saftem	Water ma		1	Other.		THE STEIN STEEL	100
the hydrology criterion met?	Yes		N	0 0			
Comments:		90000°		1			
		Determ	ina	ition			
Netland? Yes No Di Coward:n Class/ HGM Class: Vpland							

WETLAND DETERMINATION DATA FORM - Arid West Region

roject/Site: Beebe Springs	Phase Z	Citý/County.	Che	Sampling Date 6 March 20
pplicant/Owner: WDFW				10
vestigator(s): WTK, JAW				nge T27N RZ3E Sec 20
1 Control (1)				convex, none); Flat Stope (%):
bregion (LRR):	1 / A (1 1 / A (1 1 A (1 A (1 A (1 A (1			Long Datum:
				NWI classification: PSS/EM
climatic / hydrologic conditions on the site				, , , , , , , , , , , , , , , , , , , ,
				"Normal Circumstances" present? Yes No
Vegetation, Soil, or Hydroli				
Vegetation, Soil, or Hydroli				eded, explain any answers in Remarks.)
JMMARY OF FINDINGS - Attach	site map showing	samplin	g point le	ocations, transects, important features, etc.
lydric Soil Present? Yes	s X No X		e Sampled in a Wetlan	Y
Vetland Hydrology Present? Yes emarks:	s NoX_	20-1		
GETATION				
ree Stratum (Use scientific names.)		Species?		Number of Dominant Species That Are OBL, FACW, or FAC:(A)
				Total Number of Dominant Species Across All Strata: (B)
				Percent of Dominant Species
- Carlos A Contact	Total Cover:	_		That Are OBL, FACW, or FAC: 57% (A/B)
RUGUS acmentacus	30	J	FACU	Prevalence Index worksheet:
Alous rulera	15	-	FAC	Total % Cover of Multiply by
Salix exiaua	O	J	OBL	OBL species x 1 =
				FACW species x 2 =
				FAC species x 3 =
A Contrar	Total Cover: 55	_		FACU species x 4 =
Plantago Jancedata	20	J	FAC	UPL species x 5 =
Verbaseum thopsus	10	J	1.01	Column Totals: (A) (B)
Agrostis sp	25	V	FAC (4)	Prevalence Index = B/A =
Equisation gruense	Ţ	100	FAC	Hydrophytic Vegetation Indicators:
Juneus tempe	5		FAS	∑ Dominance Test is >50%
Carex Sp				Prevalence Index is ≤3.0'
Denothera sp	10	V	UPL (a	Morphotogical Adaptations' (Provide supporting data in Remarks or on a separate sheet)
	Total Cover. 80			Problematic Hydrophytic Vegetation (Explain)
/oody Vine Stratum		10.000		¹ Indicators of hydric soil and wetland hydrotogy must be present.
	Total Cover:			Hydrophytic
Dava Crawadia Unda Our	1244 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-	_	Vegetation
Bare Ground in Herb Stratum	% Cover of Biotic (Crust		Present? Yes No No
emarks:				†

Depth Matrix	Redox Features	-
inches) Color (moist) %	Color (moist) % Type L	
1-3 10 YK 3/2 100		silt loar
3-12 25Y 3/2 100	very few too small to color	M sand can we reserved
12+ rock refusal		
Type: C≃Concentration, D=Depletion, J	McDatured Manay - 7 and in the Company	ning, RC=Root Channel, M=Matrix
ydric Soil Indicators: (Applicable to		Indicators for Problematic Hydric Solls ³ :
Histosol (A1)	Sandy Redox (S5)	1 cm Muck (A9) (LRR C)
Histic Epipedon (A2)	Stripped Matrix (S6)	2 cm Muck (A10) (LRR B)
Black Histic (A3)	Loamy Mucky Mineral (F1)	Reduced Vertic (F18)
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	Red Parent Material (TF2)
Stratified Layers (A5) (LRR C)	Depleted Matrix (F3)	Other (Explain in Remarks)
1 cm Muck (A9) (LRR D)	Redox Dark Surface (F6)	
Depleted Below Dark Surface (A11)	Depleted Dark Surface (F7)	
Thick Dark Surface (A12)	Redox Depressions (F8)	
Sandy Mucky Mineral (S1)	Vernal Pools (F9)	Indicators of hydrophytic vegetation and
Sandy Gleyed Matrix (S4)		wetland hydrology must be present.
estrictive Layer (If present):		
Type:		\searrow
Depth (inches):		Hydric Soil Present? Yes No 2
(DROLOGY		
		Secondary Indicators (2 or more required)
Vetland Hydrology Indicators:	sufficient)	Secondary Indicators (2 or more required) Water Marks (B1) (Riverine)
Vetland Hydrology Indicators: rimary Indicators (any one indicator is s		Water Marks (B1) (Riverine)
Vetland Hydrology Indicators: rimary Indicators (eary one indicator is s Surface Water (A1)	Salt Crust (B11)	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine)
Vetland Hydrology Indicators: rimery Indicators (early one indicator is s Surface Water (A1) High Water Table (A2)	Salt Crust (B11) Biotic Crust (B12)	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine)
High Water Table (A2) Saturation (A3)	Salt Crust (B11) Biotic Crust (B12) Aquatic invertebrates (B13)	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10)
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Vetland Hydrology Indicators: rimery Indicators (early one indicator is s Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine)	Salt Crust (B11) Biotic Crust (B12) Aquatic invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Livi	Water Marks (B1) (Riverine) Sediment Deposits (B2) (Riverine) Drift Deposits (B3) (Riverine) Drainage Patterns (B10) Dry-Season Water Table (C2) Thin Muck Surface (C7)
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US Army Corps of Engineers

Arid West - Version 11-1-2006

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site. Beele Spring Par	42	ity/County.	Chel		
Applicant/Owner:				State: WA	
nvestigator(s): WTF JAW		Section, Tox	wnship, Ran	ge: T27N	R23E / Sec 20
andform (hillslope, terrace, etc.): _					
Subregion (LRR): 3	Lat:			Long:	Datum:
ioil Map Unit Name: Chalan 4ra	ully sandy 1	am		NWI classif	ication: PSS /EM
re climatic / hydrologic conditions on the site t	ypical for this time of yea	r? Yes	No	(if no, explain in	Remarks.)
re Vegetation, Soil, or Hydrolo					present? Yes 💢 No
re Vegetation Soil, or Hydrolo				eded, explain any answ	
SUMMARY OF FINDINGS – Attach				ocations, transect	s, important features, etc.
Hydric Soil Present? Yes	X No	1000000	e Sampled In a Wetlan		No
Remarks:					
/EGETATION	Absolute	Dominant	Indicator	Dominance Test wo	rksheet:
Tree Stratum (Use scientific names.)		Species?	- A -	Number of Dominant	
1. Alaus ruben			FAC	That Are OBL. FACW	, or FAC: (A)
2				Total Number of Dom	7.7.7.1
3				Species Across All St	rala:(B)
Sapling/Shrub Stratum	Total Cover: 20	20 10 10 line		Percent of Dominant That Are OBL, FACW	
1 Ruses almaniness	30	1	FACU	Provalence Index w	orksheet:
2.				Total % Cover of	Multiply by:
3					x 1 =
<u> </u>					x 2 =
5					x 3 =
Herb Stratum	Total Cover: 30				x 4 = x 5 =
Phalonis arundinasan	70	V	FALLY		(A) (B)
2 Sulphager Consideries	5		UPL	Country Totals:	(A) (B)
3. Equipe from laco: gartum	5		FALW	Prevalence Inde	ex = B/A =
4 Argostis epillaris e.F.	- 5.5	1	FAC	Hydrophytic Vegeta	
5,				Dominance Test	
6				Prevalence Index	
7				data in Rema	taptations (Provide supporting rks or on a separate sheet)
8					rophytic Vegetation (Explain)
Woody Vine Stratum	Total Cover:				
1				1000	oil and wetland hydrology must
2.				be present.	
	Total Cover:			Hydrophytic	
% Bare Ground in Herb Stratum	% Cover of Biolic Co	rust		Vegetation Present?	/es No
Remarks:			1 0 3		

(inches) Color (moist) %	Redox Features		-
	Color (moist) % Type'	Loc' Texture	Remarks
	754KT/4 2 C	M Sanh Juan n	of cutables grave
10 + not retrial 100			- CA
			- 17
THE PROPERTY OF THE PARTY OF TH	CATTERNAL CO.		
Type: C=Concentration, D=Depletion, RM		uning, RC≋Root Channel, M=Matrix	
lydric Soil Indicators: (Applicable to all	LRRs, unless otherwise noted.)	Indicators for Problem	atic Hydric Soits ³ ;
Histosol (A1)	★ Sandy Redox (S5)	1 cm Muck (A9) (LF	RR C)
Histic Epipedon (A2)	Stripped Matrix (S6)	2 cm Muck (A10) (L	
Black Histic (A3)	Loamy Mucky Mineral (F1)	Reduced Vertic (F1	
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	Red Parent Matena	
Stratified Layers (A5) (LRR C)	Depleted Matrix (F3)	Other (Explain in Re	emarks)
1 cm Muck (A9) (LRR D) Depleted Below Dark Surface (A11)	Redox Dark Surface (F6)		
Thick Dark Surface (A11)	Depleted Dark Surface (F7)		
Sandy Mucky Mineral (S1)	Redox Depressions (F8) Vernal Pools (F9)	Indicators of hydrophyti	is constitution and
Sandy Macky Militeral (S1)	Vental Pods (F9)	welland hydrology m	
estrictive Layer (if present):		walle riverous y ma	
Type:		i i	
Depth (inches);		Hydric Soil Present?	v X v-
Remarks			
YDROLOGY	·		
Velland Hydrology Indicators:		UNIVER PRESENT EA	ovs (2 or more required)
Velland Hydrology Indicators: himary Indicators (any one indicator is suffi	2/8/9	Water Marks (B1) (Riverine)
Velland Hydrology Indicators: tunary Indicators (any one indicator is suffi Surface Water (A1)	Salt Crust (B11)	Water Marks (I	B1) (Riverine) osils (B2) (Riverine)
Velland Hydrology Indicators: nimary Indicators (any one indicator is suffi Surface Water (A1) High Water Table (A2)	Salt Crust (B11) Biotic Crust (B12)	Water Marks (I Sediment Dep Drift Deposits (B1) (Riverine) osils (B2) (Rivorine) (B3) (Riverine)
Vetland Hydrology Indicators: tunary Indicators (any one indicator is suffi Surface Water (A1) High Water Table (A2) Saturation (A3)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13)	Water Marks (I Sediment Dep Drift Deposits (Drain age Patto	B1) (Riverine) osifs (B2) (Riverine) (B3) (Riverine) ans (B10)
Vetland Hydrology Indicators: Immary Indicators (any one indicator is suffi Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1)	Water Marks (I Sediment Dep Drift Deposits (Drain age Patto Dry- Season W	B1) (Riverine) osifs (B2) (Rivorine) (B3) (Riverine) ans (B10) fater Table (C2)
Vetland Hydrology Indicators: temary Indicators (any one indicator is suffi Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13)	Water Marks (I Sediment Dep Drift Deposits (Drain age Patto Dry- Season W	B1) (Riverine) osifs (B2) (Rivorine) (B3) (Riverine) ans (B10) fater Table (C2)
Vetland Hydrology Indicators: temary Indicators (any one indicator is suffi Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Li Presence of Reduced Iron (C4)	Water Marks (I Sediment Dep Drift Deposits (Drainage Patto Dry-Season W ring Roots (C3) Crayfish Burro	B1) (Riverine) osifs (B2) (Rivorine) (B3) (Riverine) ens (B10) fater Table (C2) face (C7) ws (C8)
Vetland Hydrology Indicators: temary Indicators (any one indicator is suffi Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Solf Cracks (B6)	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Li Presence of Reduced Iron (C4) Recent Iron Reduction in Plowe	Water Marks (I Sediment Dep Drift Deposits (Drainage Patto Dry-Season W ring Roots (C3) Crayfish Burro	B1) (Riverine) osifs (B2) (Rivorine) (B3) (Riverine) ens (B10) fater Table (C2) face (C7) ws (C8)
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Veilland Hydrology Indicators: Primary Indicators (any one indicator is sufficient and indicator is sufficient (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Indicator Visible on Aerial Imagery (Bit Water-Staured Leaves (B9) Teld Observations: Water Table Present? Ves	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Li Presence of Reduced Iron (C4) Recent Iron Reduction in Plowe Other (Explain in Remarks) No Depth (inches) Depth (inches)	Water Marks (I Sediment Dep Drift Deposits (I Drainage Patte Dry-Season W fing Roots (C3) Crayfish Burror Saturation Visi Shallow Aquita FAC-Neutral T Wotland Hydrofogy Present?	B1) (Riverine) osits (B2) (Riverine) (B3) (Riverine) sins (B10) fater Table (C2) face (C7) ws (C8) ble on Aerial Imagery (C9 and (D3) est (D5)
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Velland Hydrology Indicators: temary Indicators (any one indicator is sufficultation (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) (Nonriverine) Sediment Deposits (B2) (Nonriverine) Drift Deposits (B3) (Nonriverine) Surface Soil Cracks (B6) Inundation Visible on Aerial Imagery (B2) Vister-Stained Leaves (B9) left Observations: urface Water Present? Ves	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along iti Presence of Reduced Iron (C4) Recent Iron Reduction in Plowe Other (Explain in Remarks) No Depth (inches) Depth (inches) Depth (inches)	Water Marks (I Sediment Dep Drift Deposits (I Drainage Patte Dry-Season W Thin Muck Sur Crayfish Burror I Soils (C6) Saturation Visi Shallow Aquita FAC-Neutral T Wotland Hydrofogy Present?	B1) (Riverine) ostis (B2) (Riverine) (B3) (Riverine) stris (B10) fater Table (C2) face (C7) ws (C8) ble on Aerial Imagery (CS) and (D3) est (D5)
Welland Hydrology Indicators: Primary Indicators (any one indicator is sufficient and indicator i	Salt Crust (B11) Biotic Crust (B12) Aquatic Invertebrates (B13) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Li Presence of Reduced Iron (C4) Recent Iron Reduction in Plowe Other (Explain in Remarks) No Depth (inches) Depth (inches)	Water Marks (I Sediment Dep Drift Deposits (I Drainage Patte Dry-Season W Thin Muck Sur Crayfish Burror I Soils (C6) Saturation Visi Shallow Aquita FAC-Neutral T Wotland Hydrofogy Present?	B1) (Riverine) osits (B2) (Riverine) (B3) (Riverine) sins (B10) ater Table (C2) face (C7) ws (C8) ble on Aerial Imagery (C9 and (D3) est (D5)

APPENDIX B WASHINGTON STATE DEPARTMENT OF ECOLOGY WETLAND RATING DATA FORMS

WETLAND RATING FORM - EASTERN WASHINGTON

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

Name of wetland (if known):A	Date of site	visit: 6 March 2007
Rated by B.H. Kidder	Trained by Ecology? Yes YNo Da	te of training April 200
SEC: 20 TWNSHP: 27 № RNGE: 23 E	Is S/I/R in Appendix D? Yes No_X	-
Map of wetland unit: F	igure Estimated size	-
SUM	MARY 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 Score for Hydrologic Functions Score for Habitat Functions TOTAL score for functions	8 4 22 34
Category based on SPECIAL CH I II III Final Category (choose		III.

Summary of basic information about the wetland unit

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



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.	X	
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).		X
SP3. Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?	X	
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.		X

bull front; Upper Columbia Steehend; Upper Columbia spongram Chiavole are all in

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.

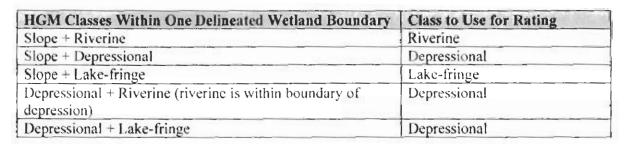


Classification of Vegetated Wetlands for Eastern Washington

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 I X The vegetated part of the	both of the following criteria? wetland is on the shores of a body of open water (without any
	re) at least 20 acres (8 ha) in size;
	water area is deeper than 3 m (10 ft)?
NO – go to Step 2 YE	S The wetland class is Lake-fringe (lacustrine fringe)
2. Does the entire wetland unit meet a	
	e (slope can be very gradual),
comes from seeps. It ma	the wetland in one direction (unidirectional) and usually ay flow subsurface, as sbeetflow, or in a swale without distinct
banks.	1.10
	tland without being impounded?
	does not pond in these type of wetlands except occasionally in depressions or behind hummocks (depressions are usually
<3ft diameter and less to	
NO - go to Step 3 YE	S – The wetland class is Slope
	ey or stream channel where it gets inundated by overbank in general, the flooding should occur at least once every ten
years to answer "yes." The wetland of	can contain depressions that are filled with water when the
river is not flooding.	
NO - go to Step 4 YES	S – The wetland class is Riverine
35 H	graphic depression, outside areas that are inundated by
**************************************	nds, or is saturated to the surface, at some time of the year.
	is higher than the interior of the wetland.
NO go to Step 5 YES	S – The wetland class is Depressional
5. Your wetland unit seems to be diffi	icult to classify and probably contains several different HGM
clases. For example, seeps at the base	e 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 HYDR	OLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7
	THE UNIT (make a rough sketch to help you decide). Use
	propriate class to use for the rating system if you have several
	tland. NOTE: Use this table only if the class that is
	epresents 10% or more of the total area of the wetland unit
being rated. If the area of the class lis	sted 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.



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.



L	Lake-fringe Wetlands WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	Points (only 1 score per box)
L	L 1.0 Does the wetland have the potential to improve water quality?	(see p.52)
L	1. 1.1 Average width of vegetation along the lakeshore: Vegetation is more than 33ft (10m) wide points = 6 Vegetation is between 16 ft (5m) and 33ft wide points = 3 Vegetation is 6ft (2m) wide to < 16 ft wide points > 1 Map of Cowardin classes with widths marked	Figure 4
L	L 1.2 Characteristics of the vegetation in the wetland choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. These are not Cowardin classes. Area of Cover is total cover in the unit, but it can be in patches. NOTE: Herbaceous does not include aquatic bed. Herbaceous plants cover >90% of the vegetated area points = 6 Herbaceous plants cover >2/3 of the vegetated area points = 3 Other vegetation that is not aquatic bed in > 2/3 vegetated area points = 3 Other vegetation that is not aquatic bed in > 1/3 vegetated area points = 1 Aquatic bed cover > 2/3 of the vegetated area points = 0 Map with polygons of different vegetation types	
L	Total for L1 Add the points in the boxes above	4
L	L 2.0 Does the wetland have the opportunity to improve water quality? Answer YES if you know or believe there are pollutants in the lake water, or surface water flowing through the wetland to the lake is polluted. 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. — Wetland is along the shores of a lake or reservoir that does not meet water quality standards — Grazing in the wetland or within 150ft — Untreated stormwater flows into the wetland — Residential or urban areas are within 150 ft of wetland Powerboats with gasoline or diesel engines use the lake	multiplier
	— Parks with grassy areas that are maintained, ballfields, golf courses (all within 150 ft. of shore of lake) Other multiplier is 2 NO multiplier is 1	
L	TOTAL - Water Quality Functions Multiply the score from L1 by the multiplier in L2 Record score on p. 1 of field form	8

L	Lake-fringe Wetlands HYDROLOGIC FUNCTIONS - Indicators t shoreline erosion	hat wetland functions to reduce	Points (only I score per box)
L	L 3.0 Does the wetland have the potential to	reduce shoreline erosion?	(see p.54)
L	L 3.1 Average width and characteristics of vegeta aquatic bed): (choose the highest scoring described wetland) > ½ of the vegetation is shrubs or trees at leas > ½ of the vegetation is shrubs or trees at leas > ¼ of the vegetation is shrubs or trees at leas Vegetation is at least 6 ft (2m) wide Vegetation is less than 6 ft (2m) wide	t 33 ft (10m) wide points = 6 t 6 ft. (2 m) wide points ÷ 4	Figure <u>H</u>
L (ese	Are there features along the shore that will be which of the following conditions apply: — There are human structures and activit (buildings, fields) that can be damaged — There are undisturbed natural resource	to reduce erosion? impacted if the shoreline erodes? <i>Note</i> ics along the shore behind the wetland by erosion.	(see p. 55)
	YES multiplier is 2	NO multiplier is 1	
L	TOTAL - Hydrologic Functions	Multiply the score from L3 by the multiplier in L4 Record score on p. 1 of field form	1 '

THE PARTY OF THE P		of all HGM classes. wetland functions to provide important habitat	Point (only I see per box
H 1. Does the wetlan	nd unit have the pote	ential to provide habitat for many species?	
Check the vegetation threshold for each < 2.5 acres. Aquatic b Emergent Emergent Scrub/shrub Forested (h class or height categoried plants 0-12 in. (0 - 30 plants <12 - 40 in.(>30 plants < 40 in.(>100cr (areas where shrubs hav (areas where trees have	Cowardin) and heights of emergents present. Size by is 4 acre or more than 10% of the area if unit is cm) high are the highest layer and have > 30% cover 0 - 100cm) high are the highest layer with >30% cover m) high are the highest layer with >30% cover we >30% cover) >30% cover)	Figure 4
Add the number of ve	egetation types that qua	**	
Man of Cowardin year	station classes and area	4-6 types points = 3 3 types points = 2 2 types points = 1 1 type points = 0 as with different heights of emergents	
	egetation types "aquati		1
		D = 0 points	0
H 1.3. Surface Water		en" water (without herbaceous or shrub plants) over	Figure 4
(August - end of YES = 3 p II 1.3.2 Does the along one side, o (answer yes only	September)? <i>Note: ans</i> points & go to H 1.4 punit have an intermitte	the spring (March – early June) OR in early fall swer YES for Lake-fringe wetlands NO = go to H 1.3.2 ent or permanent stream within its boundaries, or 0% of its area, AND that has an unvegetated bottom NO = 0 points Map showing areas of open water	3
	lant Species (see p. 66)		
the same species o	can be combined to mee we to name the species.		

H 1.5. Interspersion of habitats (see p. 67)	Figure 4
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	
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 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.	.45
Standing snags (diameter at the bottom > 4 inches) in the wetland unit or within 30 m (100ft) of the edge.	e ^c
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, herbaccous, moss/ground cover)	
Maximum score possible = 6	
TOTAL Potential to provide habitat Add the scores in the column above	9

H 2.0 Does the wetland have the opportunity to provide habitat for many species?	Figure 1
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 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 = 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. Aerial photo showing buffers	Figure 4
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	
If 2.2.3 Is the wetland within a 1/2 mile of any permanent stream, seasonal stream, or lake (do not include man-made dutches)? YES = 1 point NO = 0 points	



II 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 74)	
Which of the following priority habitats are within 330ft (100m) of the wetland unit?	
NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions.	
Check with your local DFW biologist if there are any questions.	
Riparian: The area adjacent to aquatic systems with flowing water that contains elements of	
both aquatic and terrestrial coosystems which mutually influence each other.	
Aspen Stands: Pure or mixed stands of aspen greater than 2 acres.	
Cliffs: Greater than 25 ft high and occurring below 5000 ft.	
Old-growth forests: (east of Cascade crest): In general, stands will be ≥150 years of age,	
with 10 trees/acre that are ≥ 21 in dbh, and 1 - 3 snags/acre ≥ 12-14 in diameter.	
Mature forests: Stands with average diameters exceeding 21 in dbh; crown cover may be	
less that 100%; decay, 80 - 160 years old east of the Cascade crest.	
Prairies and Steppe: Relatively undisturbed areas (as indicated by dominance of native	
plants) where grasses and/or forbs form the natural climax plant community.	
Shrub-steppe: Tracts of land consisting of plant communities with one or more layers of	
perennial grasses and a conspicuous but discontinuous layer of shrubs.	
Talus: Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft, composed of	
basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be	
associated with cliffs.	47
Caves: A naturally occurring cavity, recess, void, or system of interconnected passages	2
Oregon white Oak: Woodlands Stands of pure oak or oak/conifer associations where	
canopy coverage of the oak component of the stand is 25%.	
Urban Natural Open Space: A priority species resides within or is adjacent to the open	
space and uses it for breeding and/or regular feeding; and/or the open space functions as a	
corridor connecting other <i>priority habitats</i> , especially those that would otherwise be	
isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10	
acres) and is surrounded by urban development.	
Aspen Stands: Pure or mixed stands of aspen greater than 0.8 ha (2 acres).	
16 and an then 2 and are Districted in the first	
If wetland has 2 or more Priority Habitats = 4 points	
If wetland has 1 Priority Habitat = 2 points	
No Priority habitats 0 points	
tote: 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)	



H 2.4 <u>Landscape</u> (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 houndaries 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	13
H 3.0 Does the wetland unit have indicators that its ability to provide habitat is reduced?	
11 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)	Points will be subtracted
$YES = -5 \text{ points} \qquad NO = 0 \text{ points}$	
Total Score for Habitat Functions – add the points for H1, H2, and H3 and record the result on p. 1	22.

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 	
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 	
rot a good indicator of alkali wetlands. YES = Category 1 NO ment are alkali wetlands	Cat. I

SC 5.0 Forested Wetlands (see p. 85)		
Does the wetland unit have an area of fores forested class, if present, in question II	•	
meet at least one of the following three	· · · · · · · · · · · · · · · · · · ·	
— The wetland is within the "100 year		
— aspen (Populus tremuloides) are a c	lominant or co-dominant of the	
	neans it represents at least 50% of the	
	nt means it represents at least 20% of	
the total cover of woody species)There is at least ¼ acre of trees (even)	en in wetlands smaller than 2.5 acres)	
	secording to the definitions for these	
priority habitats developed by WDI	² W (see p. 83)	
YES = go to SC 5.1 $(NO)-n$	ot a forested wetland with special characteristics	
SC 5.1 Does the wetland unit have a forest of		9
tree species (by cover) are slow growing		
Slow growing trees are: western red ce cedar (<i>Chamaecyparis nootkatensis</i>), pi		
monticola), western hemlock (Tsuga her		
engelmannii).		
YES = Category I	NO = go to SC 5.2	Cat. I
SC 5.2 Does the unit have areas where aspe	en (<i>Populus tremuloides</i>) are a	
dominant or co-dominant species?		Cat. I
YES = Category I	NO = go to SC - 5.3	
SC 5.3 Does the wetland unit have areas wi	th a forest canopy where more than	
50% of the tree species (by cover) are I	fast growing species.	
Fast growing species are:	4	
Alders – red (<i>Alnus rubra</i>), thin-leaf (<i>Contonwoods – narrow-leaf (<i>Populus a</i>)</i>		
Willows- peach-leaf (Salix amygdaloid		
lasiandra), Aspen - (Populus tremuloic		
YES = Category II	NO = go to SC 5.5	Cat. II
		Cat. II
SC 5.5 Is the forested component of the wet of a river or stream?	land within the "100 year floodplain"	
YES = Category II		
		Cat. II
Category of wetland based on Special Cl		1 1/4
	if wetland falls into several categories. all types enter "Not Applicable" on p. l	NA
11 Journal of the 100 for	an open once the rippinedote of p.1	

WETLAND RATING FORM – EASTERN WASHINGTON

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

Name of wetland (if known): Wetland	β Date of site visit: 6 March 2007			
Rated by William Kiddee	_ Trained by Ecology? Yes No Date of training April 2006			
SEC: 20 TWNSHP: 27N RNGE: 23 E Is S/T/R in Appendix D? Yes No_X				
Map of wetland unit: Figure Estimated size0,52_ or				
SUMMARY OF RATING Category based on FUNCTIONS provided by wetland				
I II IIIX_				
Category I = Score >= 70 Category II = Score 51-69 Category III = Score 30-50 Category IV = Score < 30	Score for "Water Quality" Functions Score for Hydrologic Functions Score for Habitat Functions TOTAL score for functions 46			
Category based on SPECIAL CHARACTERISTICS of wetland I II				

Summary of basic information about the wetland unit

Wetland Type		Wetland Class	Sin
Vernal Pool	1	Depressional	
Alkali		Riverine	
Natural Heritage Wetland		Lake-fringe	X
Bog		Slope	
Forest			
None of the above	Х	Check if unit has multiple HGM classes present	

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		Χ
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).		X
SP3. Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?		X
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.		X

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.

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.

The vegetated p	nit meet both of the following criteria? Part of the wetland is on the shores of a body of open water (without any the surface) at least 20 acres (8 ha) in size; The open water area is deeper than 3 m (10 ft)? YES - The wetland class is Lake-fringe (lacustrine fringe)
The wetland is The water flow comes from s banks. The water leav NOTE: Surfa	nit meet all of the following criteria? s on a slope (slope can be very gradual), we through the wetland in one direction (unidirectional) and usually eeps. It may flow subsurface, as sheetflow, or in a swale without distinct we the wetland without being impounded? we water does not pond in these type of wetlands except occasionally in ad shallow depressions or behind hummocks (depressions are usually and less than a foot deep). YES – The wetland class is Slope
flooding from that stream o	in a valley or stream channel where it gets inundated by overbank river? In general, the flooding should occur at least once every ten wetland can contain depressions that are filled with water when the YES – The wetland class is Riverine
4. Is the entire wetland unit overbank flooding, in which	in a topographic depression, outside areas that are inundated by a water ponds, or is saturated to the surface, at some time of the year. if present, is higher than the interior of the wetland. YES – The wetland class is Depressional
clases. For example, seeps stream within a depressional IDENTIFY WHICH OF THAPPLY TO DIFFERENT At the following table to identification of the second being rated. If the area of the second being rated.	to be difficult to classify and probably contains several different HGM at the base of a slope may grade into a riverine floodplain, or a small I wetland has a zone of flooding along its sides. GO BACK AND IE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 AREAS IN THE UNIT (make a rough sketch to help you decide). Use fy the appropriate class to use for the rating system if you have several a your wetland. NOTE: Use this table only if the class that is column represents 10% or more of the total area of the wetland unit ne class listed in column 2 is less than 10% of the unit; classify the represents more than 90% of the total area.



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 I-7 apply, and go to Question 8.

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	
	gy likely
This means that any outlet, if present, is higher than the interior of the wetland.	1
	y during runoff

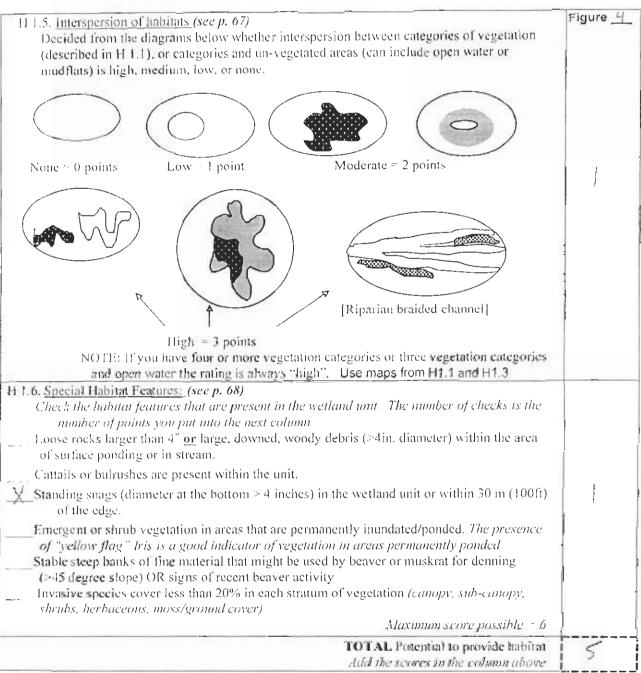
HGM Classes Within One Delineated Wetland Boundary	Class to Use for Rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine (riverine is within boundary of depression)	Depressional
Depressional + Lake-fringe	Depressional

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.

L	Lake-fringe Wetlands WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	Points (only 1 score per box)	
L	L 1.0 Does the wetland have the potential to improve water quality?		
L	L 1.1 Average width of vegetation along the lakeshore: Vegetation is more than 33ft (10m) wide points - 6 Vegetation is between 16 ft (5m) and 33ft wide points = 3	Figure	
	Vegetation is 6ft (2m) wide to < 16 ft wide points = 1 Map of Cowardin classes with widths marked	Þ	
L	L 1.2 Characteristics of the vegetation in the wetland choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. These are not Cowardin classes. Area of Cover is total cover in the unit, but it can be in patches. NOTE: Herbaceous does not include aquatic bed. Herbaceous plants cover >90% of the vegetated area points = 6 Herbaceous plants cover >2/3 of the vegetated area points = 3 Other vegetation that is not aquatic bed in > 2/3 vegetated area points = 3 Other vegetation that is not aquatic bed in > 1/3 vegetated area points = 1 Aquatic bed cover > 2/3 of the vegetated area points = 0 Map with polygons of different vegetation types	Figure <u>+</u>	
L	Total for L1 Add the points in the boxes above	12	
L	 L 2.0 Does the wetland have the opportunity to improve water quality? Answer YES if you know or believe there are pollutants in the lake water, or surface water flowing through the wetland to the lake is polluted. 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. — Wetland is along the shores of a lake or reservoir that does not meet water quality standards 	(see p. 53)	
Leza	— Grazing in the wetland or within 150ft — Untreated stormwater flows into the wetland — Tilled fields or orchards within 150 feet of wetland — Residential or urban areas are within 150 ft of wetland	multiplier	
L	TOTAL - Water Quality Functions Multiply the score from L1 by the multiplier in L2 Record score on p. 1 of field form	24	

L	Lake-fringe Wetlands HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce shoreline erosion	Points (only 1 score per box)	
L	L 3.0 Does the wetland have the potential to reduce shoreline erosion?	(see p.54)	
L	L 3.1 Average width and characteristics of vegetation along the lakeshore (do not include aquatic bed): (choose the highest scoring description that matches conditions in the wetland) > % of the vegetation is shrubs or trees at least 33 ft (10m) wide points = 6 > % of the vegetation is shrubs or trees at least 6 ft. (2 m) wide points = 4 > % of the vegetation is shrubs or trees at least 33 ft (10m) wide points = 4 Vegetation is at least 6 ft (2m) wide points = 2 Vegetation is less than 6 ft (2m) wide points = 0 Aerial photo or map with Cowardin vegetation classes	Figure 4	
L	L 4.0 Does the wetland have the opportunity to reduce erosion? Are there features along the shore that will be impacted if the shoreline erodes? Note which of the following conditions apply. — There are human structures and activities along the shore behind the wetland (buildings, fields) that can be damaged by erosion. — There are undisturbed natural resources along the shore (e.g. mature forests, other classes of wetland) behind the wetland than can be damaged by shoreline erosion — Other		
	YES multiplier is 2 NO multiplier is 1		
L	TOTAL - Hydrologic Functions Multiply the score from L3 by the multiplier in L4 Record score on p. 1 of field form	4	

se questions apply to wetlands of all HGM classes. ITAT FUNCTIONS - Indicators that wetland functions to provide important habitat	Points (only 1 scor per box)
Does the wetland unit have the potential to provide habitat for many species?]
	Figure 4
Categories of vegetation structure (see p.62) seck 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)	1
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	
of Cowardin vegetation classes and areas with different heights of emergents	
.2. Is one of the vegetation types "aquatic bed?" (see p .64) $YES = 1 \text{ point} \qquad NO = 0 \text{ points}$	Ø
3. Surface Water (see p.65)	Figure 4
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 ½ 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	0
4. Richness of Plant Species (see p. 66) In 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) ou counted: - 9 species points - 1 species points - 1 species 4-9 species points - 0 points Farsales Leaving Ton German Seeding Alors of the seeding Leaving Ton Farsales Leaving Ton	
Surces tensis Plantago lancedata Elytrigia repres	



H 2.1 Buffers (see p. 71)	Figure 4
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	5
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 = I	
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	
1 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	4
11 2.2.2 Is the unit part of a relatively undisturbed and unbroken, > 30 ft wide, vegetated corridor, at least ½ 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	
11 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)?	

H 2.3 Near or adjacent to other priority habitats listed by	y WDFW (see p. 74)	
Which of the following priority habitats are within 330f	t (100m) of the wetland unit?	
NOTE: the connections do not have to be relatively un	ndisturbed. These are DFW definitions.	
Check with your local DFW biologist if there are any	questions.	
Riparian: The area adjacent to aquatic systems w	fith flowing water that contains elements of	
both aquatic and terrestrial ecosystems which mut	tually influence each other.	
Aspen Stands: Pure or mixed stands of aspen gre	ater than 2 acres.	
Cliffs: Greater than 25 ft high and occurring below	w 5000 ft.	
Old-growth forests: (east of Cascade crest): In go	eneral, stands will be >150 years of age.	
with 10 trees/acre that are \Rightarrow 21 in dbh, and 1 - 3 s	nags/acre > 12-14 in diameter.	
Mature forests: Stands with average diameters e	xceeding 21 in dbh; crown cover may be	
less that 100%: decay, 80 - 160 years old east of t	he Cascade crest.	
Prairies and Steppe: Relatively undisturbed area	is (as indicated by dominance of native	
plants) where grasses and/or forbs form the natura	il climax plant community.	
Shrub-steppe: Tracts of land consisting of plant c		
perennial grasses and a conspicuous but discontin		
Talus: Homogenous areas of rock rubble ranging		
basalt, andesite, and/or sedimentary rock, includir	ng riprap slides and mine tailings. May be	
associated with cliffs.		
Caves: A naturally occurring cavity, recess, void,		2
Oregon white Oak: Woodlands Stands of pure of		·
canopy coverage of the oak component of the star		
Urban Natural Open Space: A priority species re		
space and uses it for breeding and/or regular feedi		
corridor connecting other priority habitats, especi		
isolated; and/or the open space is an isolated remn	ant of natural habitat larger than 4 ha (10	
acres) and is surrounded by urban development.		
Aspen Stands: Pure or mixed stands of aspen grea	ater than 0.8 ha (2 acres).	
If wetland has	2 or more Priority Habitats = 4 points	
	etland has 1 Priority Habitat = 2 points	
-	No Priority habitats = 0 points	
ote: All vegetated wetlands are by definition a priority had		
Nearby wetlands are addressed in question H 2.4)		

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

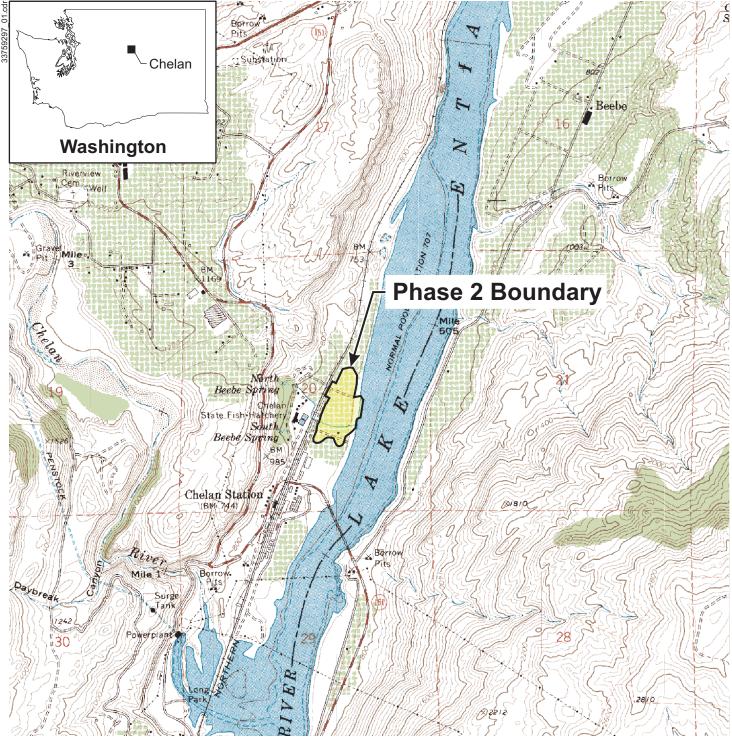
Please determine if the wetland unit meets the attributes described below and circle the appropriate Category, NOTE: A wetland may meet the criteria for more than one set of special characteristics. Record all those that apply, NOTE: All units should also be characterized based on their functions.

Wetland Type	Category
Check off any criteria that apply to the wetland. Circle the Category when the	
appropriate criteria are met.	
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 - pot 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. 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 ¼ 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. 	Cat. I
YES = Category ! (NO) not an alkali wetland	

	_
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 WNIIP/DNR) S/T/R information from Appendix D \(\frac{1}{2} \) or accessed from WNHP/DNR database YES contact WNHP/DNR (see p. 79) and go to SC 3.2 NO \(\frac{1}{2} \) 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	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 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 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)?	Cat. I
Yes - Category I bog No - go to Q. 4.4	Cat. 1
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.	
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 1 bog NO	Cat. I

	f wetland falls into several categories. Il types enter "Not Applicable" on p.1	
Category of wetland based on Special Cha		
· · · · · · · · · · · · · · · · · · ·		Cat. II
YES = Category II		
SC 5.5 Is the forested component of the wetle of a river or stream?	and within the "100 year floodplain"	
00.551.1.0		van H
YES - Category II	NO = go to SC 5.5	Cat. II
lasiandra). Aspen - (Populus tremuloide	es), Water Birch (Betula occidentalis)	
Cottonwoods – narrow-leaf (<i>Populus ar</i> Willows- peach-leaf (<i>Salix amygdaloide</i>		
Alders - red (Alms rubra), thin-leaf (A		
Fast growing species are:		
50% of the tree species (by cover) are fa		
SC 5.3 Does the wetland unit have areas with	h a farret egnany where more than	
YES = Category I	NO = go to SC - 5.3	
SC 5.2 Does the unit have areas where aspen (<i>Populus tremuloides</i>) are a dominant or co-dominant species?		Cat. I
	Ŭ .	
YES = Category I	NO = go to SC 5.2	Cat. I
monticola), western hemlock (Tsuga het engelmannii).	erophylla), Englemann spruce (<i>Picea</i>	
cedar (Chamaecyparis nootkatensis), pi		
Slow growing trees are: western red ced		15
SC 5.1 Does the wetland unit have a forest of tree species (by cover) are slow growing	1 -	
	ot a forested wetland with special characteristics	-
priority habitats developed by WDI	•	
that are "mature" or "old-growth" a	ecording to the definitions for these	
	en in wetlands smaller than 2.5 acres)	
cover of woody species, co-dominal the total cover of woody species)	nt means it represents at least 20% of	ł.
	neans it represents at least 50% of the	
— aspen (Populus tremuloides) are a c	fominant or co-dominant of the	
The wetland is within the "100 year		
forested class, if present, in question 11 meet at least one of the following three		
Does the wetland unit have an area of fores	,	

APPENDIX C SITE PHOTOGRAPHS



SOURCE: 7.5-minute USGS topographic quadrangle, Chelan Falls, Washington, 1981

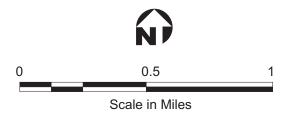
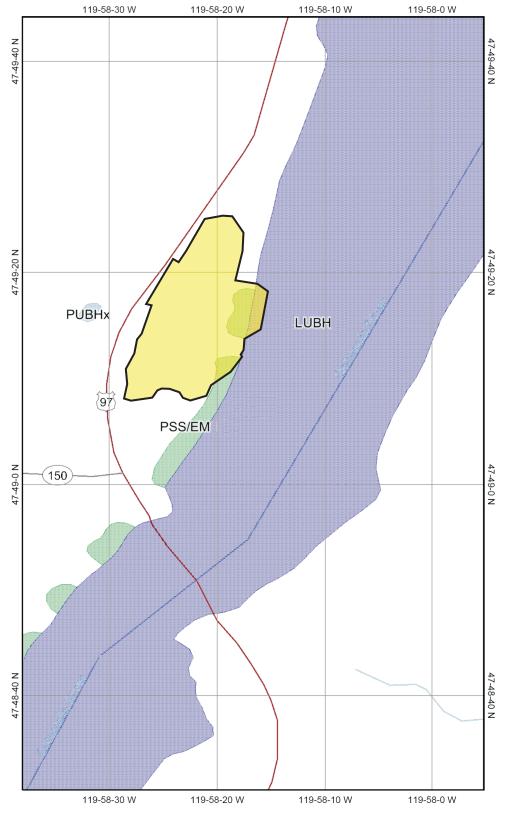


Figure 1
Site Vicinity



LEGEND

LUB Lacustrine

unconsolidated bottom

PSS/EM Palustrine

scrub-shrub/emergent

PUB Palustrine

unconsolidated bottom

Map center: 47° 49' 8" N, 119° 58' 17" W

Scale: 1:14,475

Figure 2

SOURCE: U.S. Fish and Wildlife Service NWI mapping tool, 1998

National Wetlands Inventory

Job No. 33759297

33759297_03.cdr

SOURCE: Soil Survey of Chelan County Area, Washington, USDA Natural Resources Conservation Service

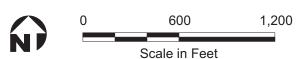


Figure 3 **Soils**

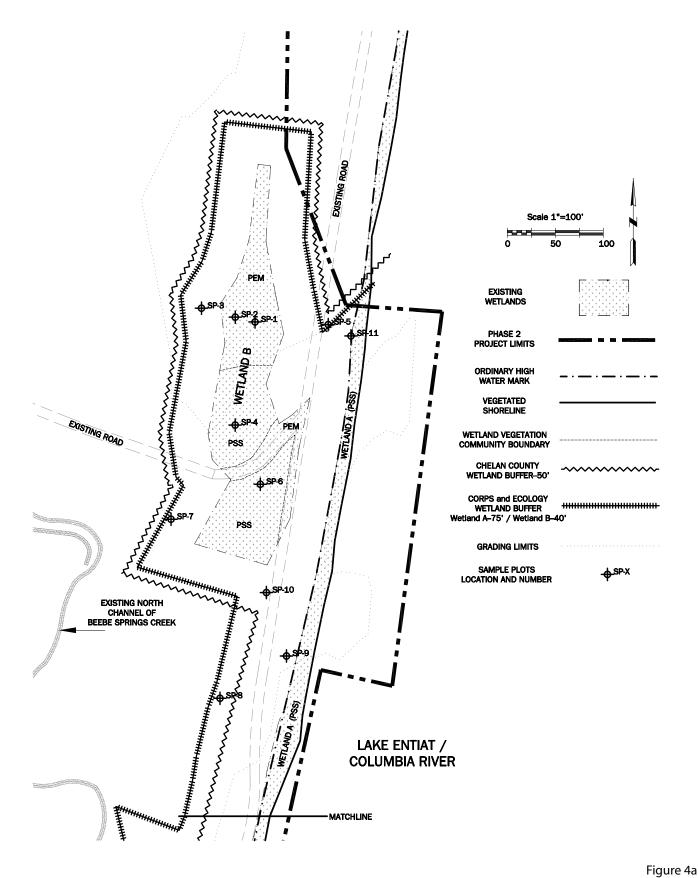
Job No. 33759297

Pogue gravelly fine sandy loam, 3 to 8 percent slopes

Supplee very fine sandy loam, 3 to 8 percent slopes

PrB

SuB



Existing Wetlands



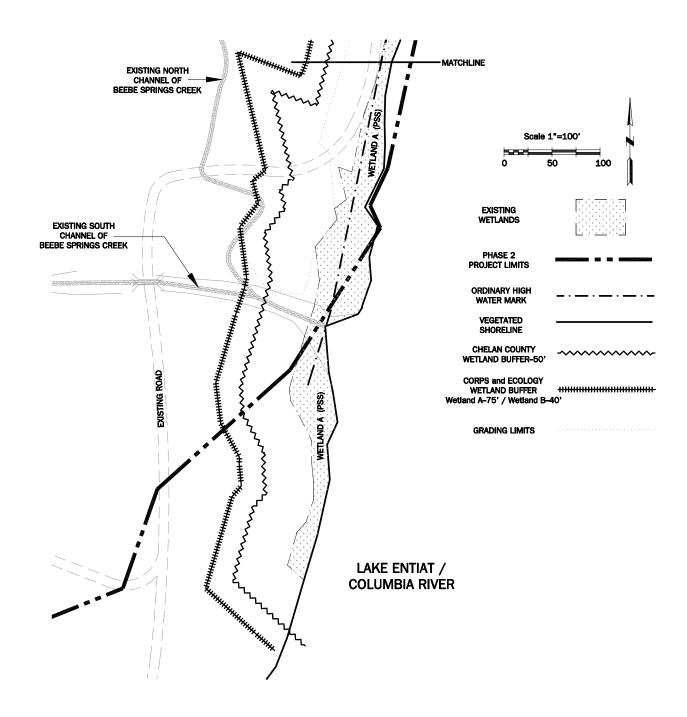


Figure 4b Existing Wetlands

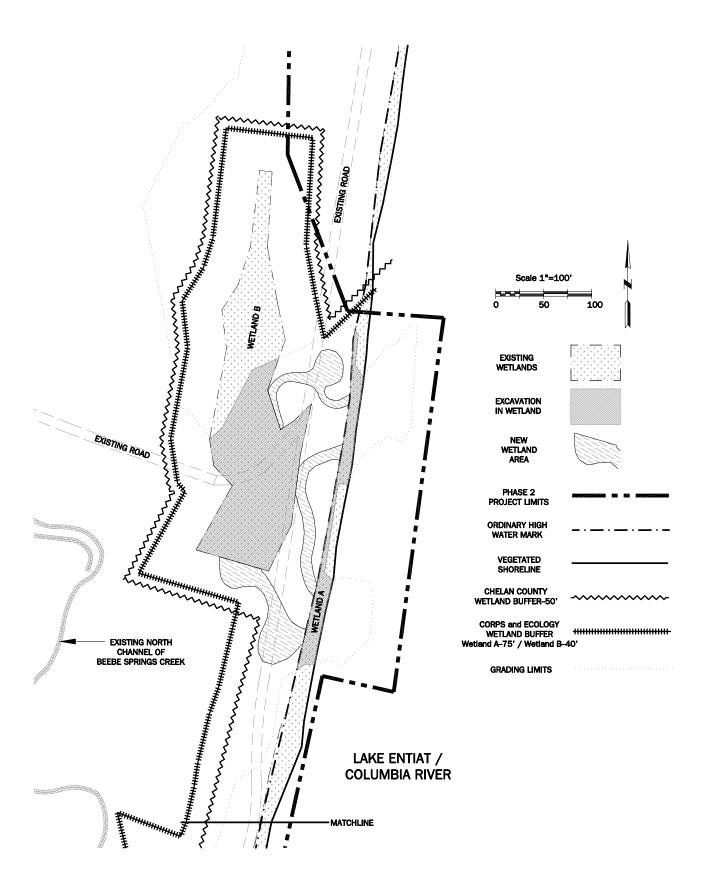


Figure 5a
Wetland Impacts

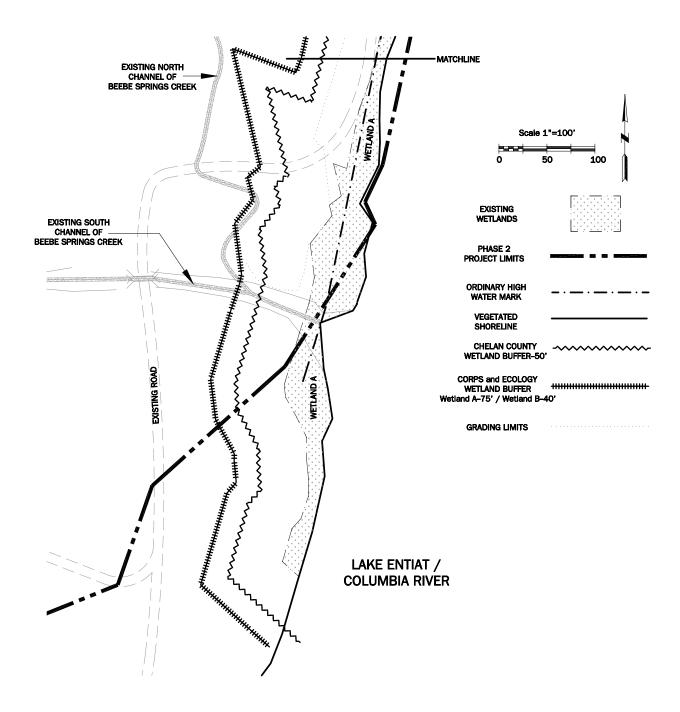


Figure 5b
Wetland Impacts

