EXHIBIT 34

Final Wetland Delineation Report
for

Parklands at Camas Meadows
Camas, Washington

Prepared for:

Parklands at Camas, LLC
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(360) 823-6222

Prepared by:

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Preliminary Draft August 2015
Interim Draft November 2015
Final Report December 2015 w/ Final Wetland Rating Summary
ELS Project #2255.01

SIGNATURES

The information and data in this report were compiled and prepared under the supervision and direction of the undersigned.

Timothy Haderly
Principal/Ecologist

Rachel Allison
Biologist

TABLE OF CONTENTS

Figures:

Appendix A:

Appendix B:

Photoplates 1 & 2

INTRODUCTION

Ecological Land Services, Inc. (ELS) has completed a wetland delineation for Parklands at Camas, LLC on NW 218th Avenue, in Camas, Washington. The study area consists of Tax Parcels 175948-000 and 986031-650, and is located in Section 28, Township 2 North, Range 3 East, of the Willamette Meridian in the City of Camas Water Resources Inventory Area 28 (Figure 1). This report summarizes the findings of the wetland determination according to the *City of Camas Municipal Code (CMC) Chapter16.53 – Wetlands.*

METHODOLOGY

ELS conducted a site visit on April 28, 2015 to delineate the onsite critical areas, assess wetland functions, and gather vegetation, soils, and hydrology data within the study area. Wetlands were delineated onsite with consecutively numbered wetland boundary flagging. The wetland boundaries were primarily determined by topographical changes and the presence of hydric soils, hydrology, and hydrophytic vegetation. Vegetation, soil, and hydrology data were collected from seven test plots within the study area to verify the presence and boundaries of the wetlands (Figure 2 and Appendix A). Soil colors in test plots were evaluated by hue, value, and chroma using the Munsell Soil Color Chart (Munsell 2000).

Wetlands A, B and C were delineated using the Routine Determination Method according to the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987), the *Final Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (2010). The Routine Determination Method examines vegetation, hydrology, and soils to determine if wetlands exist in a given area. The presence of hydrology is critical in determining what qualifies as a wetland; however, since hydrologic conditions can change periodically (hourly, daily, or seasonally) it is necessary to determine if hydrophytic vegetation and hydric soils exist, indicating water is present long enough to support a wetland plant community. By definition, wetlands are those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands are regulated by the United States Army Corps of Engineers (Corps) as "Waters of the United States," by the Washington State Department of Ecology (Ecology) as "Waters of the State," and locally by the *City of Camas Municipal Code (CMC) Chapter 16.53 - Wetlands.*

SITE DESCRIPTION

The approximate 36-acre study area consists of mainly deciduous and coniferous forested wetlands, with small areas of forested upland hummocks interspersed. The area slopes gently to the northwest and currently there are no buildings or structures located in the study area.

Area surrounding the parcels consists of residential housing developments to the southeast, private land use (pasture) and private single-family residences to the southwest, open grassland

and a golf course to the northwest and northeast, with Lacamas Creek and Lacamas Lake on the other side of the golf course. The property is accessed from NW Camas Meadows Drive and NW Payne Street, along the western property boundary.

SOILS

The soils within the study area are mapped as Cove silty clay loam, 0 to 3 percent slopes (CvA), Hesson clay loam, 0 to 8 percent slopes (HcB), Hesson clay loam, 8 to 20 percent slopes (HcD), Hesson clay loam, 20 to 30 percent slopes (HcE), and Lauren gravelly loam, 0 to 8 percent slopes (LgB) (Figure 3).

Cove silty clay loam soil is found in concave drainage ways and in large, flat, old lakebeds. The slope is generally less than 1 percent. In a typical profile the surface layer is very dark gray silty clay loam about 4 inches thick. Below this is firm clay about 32 inches thick. Surface runoff is very slow, and ponding is common in winter unless drainage is provided. The Cove series consists of deep, poorly drained, mostly nearly level soils. The Hesson clay loam series soils are generally found on terraces and are formed from alluvium. The slopes range from 0 to 30 percent. In typical profiles, Hesson clay loams consist of clay loam from 0 to 12 inches below ground surface (BGS) and clay from 12 to 60 inches BGS. Hesson clay loam (HcE) differs slightly, in that a typical profile consists of clay loam from 0 to 9 inches BGS, and clay from 9 to 60 inches BGS. This soil series is well drained and has a very low tendency, to no tendency of ponding. Lauren gravelly loam is found on terraces and is formed from alluvium with volcanic ash. In a typical profile, the surface layer is gravelly medial loam from 0 to 6 inches, very gravelly medial loam from 6 to 33 inches, very gravelly coarse sandy loam from 33 to 44 inches, and very gravelly loamy coarse sand from 44 to 60 inches BGS. This soil is somewhat excessively drained, and has a very low tendency, to no tendency of ponding.

Cove silty clay loam is listed as a hydric soil on the *Washington State Hydric Soils List* (NRCS 2014). The presence or absence of hydric soil does not conclude that an area is wetland or upland; along with hydric soils, hydrology and wetland vegetation must also be present to determine an area as jurisdictional wetland. Because of localized, micro-variations in topography and hydrology, wetlands may be found in areas where hydric soils have not been mapped by the soil survey.

Site evaluated wetland soils generally ranged from very dark brown (10YR 2/2) clay to black (10YR 2/1) and dark gray (10YR 4/1) silty clay loams exhibiting redoximorphic features of dark yellowish brown (10YR 3/6) and dark red (2.5YR 3/6). The wetland soils were generally consistent with the mapped soil types, as the wetland generally follows the mapped Cove silty clay loam from the NRCS.

Site evaluated upland soils generally consisted of dark brown (10YR 3/3) silt loams and clays, and exhibited no redoximorphic features. The upland soils were generally consistent with the mapped soil types bordering Cove silty clay loam, as mapped by the NRCS.

VEGETATION

Wetlands

Dominant hydrophytic vegetation within the wetland areas onsite includes Oregon ash (*Fraxinus latifolia*, FACW), bigleaf maple (*Acer macrophyllum*, FACU), red alder (*Alnus rubra*, FAC), vine maple (*Acer circinatum*, FAC), red-osier dogwood (*Cornus sericea*, FACW), Douglas spiraea (*Spiraea douglasii*, FACW), salmonberry (*Rubus spectabilis*, FAC), California false hellebore (*Veratrum californicum,* FAC), water parsley (*Oenanthe sarmentosa*, OBL), reed canarygrass (*Phalaris arundinacea*, FACW), and skunk cabbage (*Symplocarpus foetidus*, OBL).

Uplands

Dominant vegetation within the upland areas onsite includes bigleaf maple, western redcedar (*Thuja plicata*, FAC), Douglas fir (*Pseudotsuga menziesii*, FACU), non-native cedar species (NI), saxifrage species (NI), Himalayan blackberry (*Rubus armeniacus*, FACU), trailing blackberry (*Rubus ursinus*, FACU), sword fern (*Polystichum munitum*, FACU), oceanspray (*Holodiscus discolor,* FACU), beaked hazelnut (*Corylus cornuta*, FACU), Indian plum (*Oemleria cerasiformis*, FACU), and threepetal bedstraw (*Galium trifidum*, FACW).

The dominant species of vegetation in each test plot have been recorded on the attached wetland delineation data sheets (Appendix A). The indicator categories following the common and scientific names indicate the likelihood of a species to be found in wetlands. Listed from most-likely to least-likely to be found in wetlands, the indicator categories are:

- **OBL** (obligate wetland) – Almost always occur in wetlands.
- **FACW** (facultative wetland) – Usually occur in wetlands, but may occur in non-wetlands.
- **FAC** (facultative) – Occur in wetlands and non-wetlands.
- **FACU** (facultative upland) – Usually occur in non-wetlands, but may occur in wetlands.
- **UPL** (obligate upland) – Almost never occur in wetlands.
- **NI** (no indicator) – Status not yet determined.

HYDROLOGY

Wetlands A,B, and C are hydrologically influenced primarily by precipitation (including stormwater discharge) and secondarily by a high groundwater table; hydrology into Wetlands A, B, and C can be attributed primarily to precipitation, but also from stormwater runoff from surrounding housing developments, agricultural land use, and golf courses. Wetland C is mostly hydrologically influenced by precipitation, but stormwater runoff from the housing development located directly to the southeast can be an attributing factor as well. Cumulative water flow within all wetlands follows a northwest trend, following the topography of the study area. Wetlands A, B, and C are depressional wetlands, with Wetland A and B occurring throughout the northern portion of the study area, and Wetland B occurring along the eastern border of the northern portion (Figure 2). Both wetlands have highly constricted outlets.

WETLANDS INVENTORY

National Wetlands Inventory

The U.S. Fish and Wildlife Service's National Wetlands Inventory (2014; NWI) map indicates the presence of a PFOA[1] wetland within the northern portion of the study area (Figure 4). A R2UBH[2] water body (Lacamas Lake) is mapped directly to the northeast of the study area. ELS agrees with the NWI, as two depressional, forested wetlands were delineated in generally the same location as the NWI mapped wetland.

Clark County Critical Areas

The Clark County Critical Areas (CCCA) (Figure 5) map indicates no presence of wetlands or other critical areas within the study boundary. The CCCA map does however; indicate the presence of a water body (Lacamas Lake) to the northeast, and not within the confines of the study area. ELS does not agree with the CCCA map, as a depressional, forested wetland was delineated in the northern portion of the study area.

NWI and CCCA maps are typically used to gather wetland information about a region and, because of the large scale necessary for regional mapping, are limited in accuracy for localized analyses.

CONCLUSIONS

WETLANDS

ELS staff delineated Wetlands A, B, and C within the study area encompassing Tax Parcels 175948-000 and 986031-650 on April 28, 2015 (Figure 2). All three wetlands are hydrologically connected through culverts observed onsite and locations mapped with a GPS unit and therefore were rated as one wetland unit according to the Ecology's *Wetland Rating Form (Rating Form) for Western Washington-Revised* (Hruby 2014). The wetland unit is a non-tidal, freshwater, palustrine depressional wetland and supports both emergent and forested vegetation. The outlet for the wetland unit is unconstricted and permanently flowing, so long as hydrology is present and in sufficient quantity to maintain flows periods. When inundation is present, water depths range from 6 to 20 inches. Hydrologic functions may consist of some water retention on surface depressions during high flow events. Overall, drainage is slow in the wetland, but flow does eventually and directly reach Lacamas Lake.

The wetland unit is considered to have low to moderate habitat potential onsite based on the plant community's interspersion and species richness (presence and diversity of emergent, scrub-shrub, and forested vegetation), a landscape that supports multiple hydroperiods (seasonal inundation, occasional inundation, and saturation), and the presence of "special habitat features".[3] Accessibility of habitat provided by the wetland unit to other wetlands or forested

[1] **P**=palustrine, **FO**=forested, **A**=temporarily flooded

[2] **R**=riverine, **2**=lower perennial, **UB**=unconsolidated bottom, **H**=permanently flooded

[3] "…certain habitat features in a wetland provide refuge and resources for many different species. The presence of these features increases the potential that a given wetland will provide a wide range of habitats" (Hruby, 2014)

area in the local vicinity is limited by adjacent residential, commercial, and agricultural land uses. Somewhat undisturbed connectivity between the wetland unit and Lacamas Lake can be seen from aerial photography: a narrow band of relatively unmanaged vegetation (Figure 7). With consideration of the adjacent and management practices and limited connectivity, the wetland unit provides low habitat value despite being a relatively well-developed forested wetland system. Foraging opportunities are available for small mammals, common resident and migratory song birds, and birds of prey. Larger mammals, such as deer, coyotes, raccoons, and other transitory species accustomed to urbanized or developed conditions may use the wetland for short-term refuge, grazing, or hunting. There was no evidence (browse, rubs, tracks, etc.) observed by ELS during the onsite wetland assessments.

Wetland Categorization and Buffer Requirements

The wetland unit was categorized according to CMC using the Department of Ecology *Washington State Wetland Rating System for Western Washington, Revised* (Hruby, 2014). Wetlands A, B, and C are Category III wetlands. Buffer widths are based on wetland category, wetland characteristics, and land use intensity (CMC 16.53.040(b)). In this case, the proposed land use activity is a residential subdivision, a structure that meets the criteria for high land use intensity (CMC 16.53.040-4). Category III wetlands with a habitat score of 5 and a high land use intensity proposal receive a designated buffer width of one hundred twenty feet (CMC 16.53.040-4 and Table 1).

Table 1. *Summary of Critical Areas On-site.*

Wetland	Hydrogeomorphic Classification	Cowardin[1] Class	Area (acres onsite)	Category[2]	Starting Buffer Width[3] (feet)	Mitigated Buffer Width[4] (feet)
Wetland A	Depressional	Forested	5.90	III	120	50
Wetland B	Depressional	Forested	1.33	III	120	50
Wetland C	Depressional	Forested	0.12	III	120	50

[1]Cowardin *et al.* 1979
[2]Ecology *Rating Form* (Hruby 2014).
[3] According to CMC Table 16.53.040-3
[4] According to CMC 16.53.050(C)(1)(c)

BUFFER WIDTH REDUCTION JUSTIFICATION NARRATIVE

This narrative addresses the process used to establish buffers on wetlands at the Parklands at Camas Meadows project near the Camas Meadows Golf Course. Parklands at Camas is a mixed use development including 42 single-family residential lots with an adjacent professional business park consisting of four or five buildings of varying size.

Wetland buffers at the proposed Parklands at Camas Meadows project are required according to Camas Municipal Code (CMC) Chapter 16.53 – WETLANDS. The wetlands at Parklands at Camas Meadows are Category III wetlands based on the 2014 Wetland Rating System for Western Washington.

The applicant is proposing a 50-foot wide buffer based on CMC 16.53.050(C)(1)(c) *Combined Reductions. Buffer width reductions allowed under subsections (C)(1)(a) and (C)(1)(b) of this section may be added provided that minimum buffer widths shall never..., or less than fifty feet for Category III wetlands,...*

CMC 16.53.050(C)(1)(a)(i) requires a 100 foot wide relatively undisturbed, vegetated corridor between the wetland and any other priority habitats. Given the configuration of the subject site, the fact that the property to the north is controlled by another entity (golf course), and the Priority Habitat is more than 1,000 feet away; this section is not applicable to the wetland buffer requirements on the subject site.

CMC 16.53.050(C)(1)(a)(ii) requires measures to minimize impacts to the land adjacent to the wetland to help reduce impacts to the wetland. The project applicants have agreed to implement the following measures to assure the on-site wetland is protected from the proposed adjacent developments:

1. CCR's will be written, recorded, and enforced as applicable to uses within and adjacent to wetlands and buffers.
2. Storm water from streets and traffic bearing surfaces will be collected, treated, and conveyed in facilities outside of the from wetlands and the associated buffers. The wetlands and buffers will **NOT be used for storm water treatment or detention/retention facilities.**
3. Native vegetation and soils will be retained in the wetland buffer areas.
4. Outdoor lighting will be designed to reduce the encroachment of light into the resource area. Use of green LED low watt bulbs and shielding will be encouraged.
5. Noise will be controlled by implementing an evening curfew quiet time period. All fireworks and other noise making devices will be strictly prohibited.
6. Wetland buffers will be demarcated be erecting black wrought iron or similar fencing with an open spacing design.
7. No personal gates will be allowed from back yards into the wetland buffer area.
8. Fertilizers, pesticides, and herbicides use in back yards will be discouraged.
9. Backyard landscaping will be focused on using native trees, shrubs, and ground covers to increase habitat and reduce to need for chemicals and irrigation.
10. Informational signage will be installed along the outer edge of the wetland buffer to further demarcate the resource area.

CMC 16.53.050(C)(1)(b) requires a 100 foot wide relatively undisturbed, vegetated corridor between the wetland and any other priority habitats. Given the configuration of the subject site, the fact that the property to the north is controlled by another entity (golf course), and the Priority Habitat is more than 1,000 feet away; this section is not applicable to the wetland buffer requirements on the subject site.

It is our opinion that a 50-foot wide buffer on the Category III wetland at the Parklands at Camas project site (1) meets the code requirements of CMC Chapter 16.53 and (2) will adequately protect the wetland from proposed developments at the site. With proper enhancements and protections outlined previously, we believe that a 50-foot wide buffer will provide functions equal to or greater than the standard 120-foot wide buffer.

LIMITATIONS

ELS personnel base the conclusions contained within this report on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies should agree with the findings presented in this report.

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. There are no other warranties, express or implied. The services preformed were consistent with our agreement with our client. This report is prepared solely for the use of our client and may not be used or relied upon by a third party for any purpose. Any such use or reliance will be at such party's risk.

The opinions and recommendations contained in this report apply to conditions existing when services were performed. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report. ELS does not warrant the accuracy of supplemental information incorporated in this report that was supplied by others.

REFERENCES

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FIGURES

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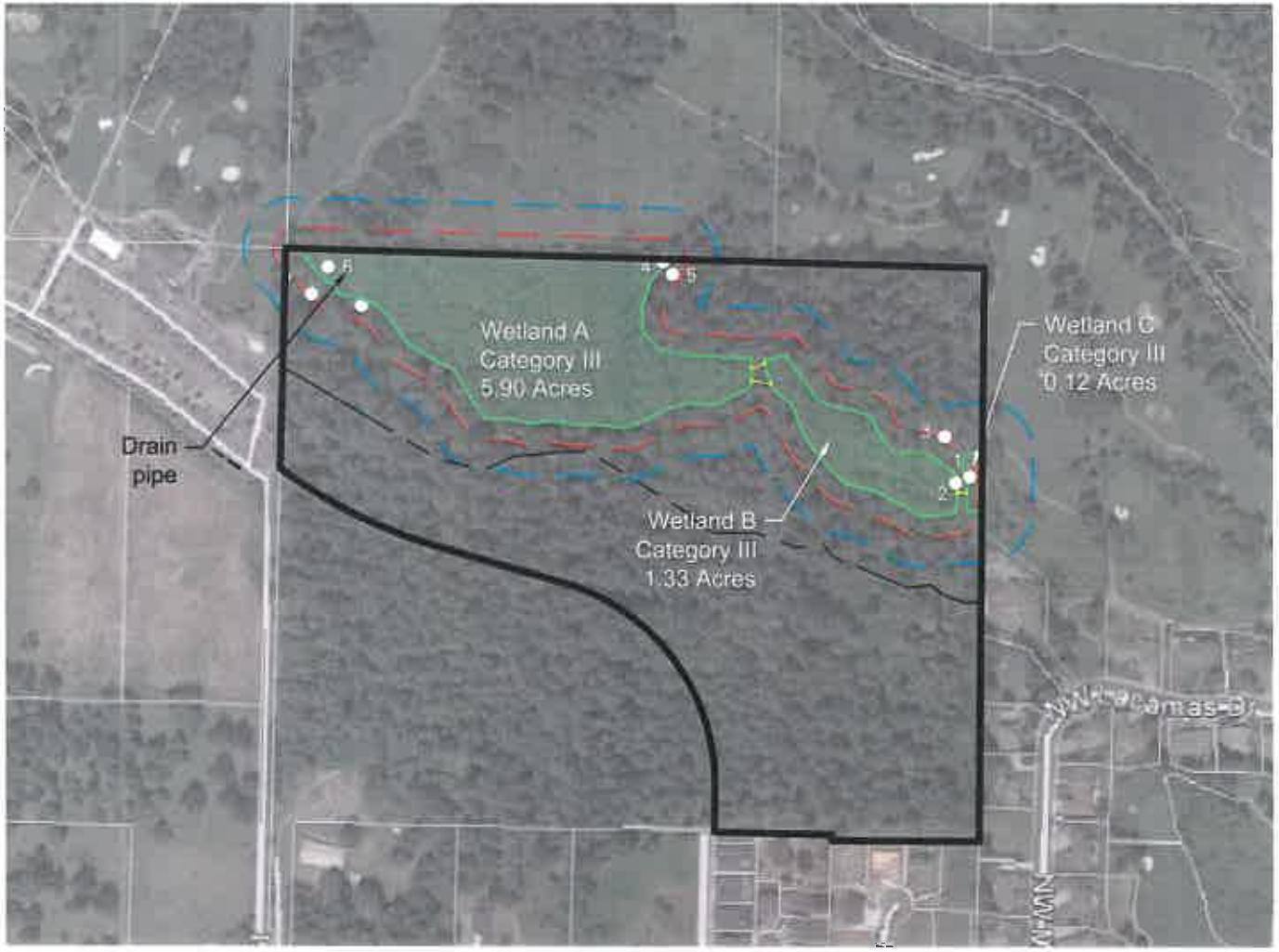

LEGEND:

- Site Boundary
- Wetland
- 120' Buffer
- 50' Reduced Buffer
- 1 ● Test Plot Location
- Culvert
- Parcel Boundary

NOTE(S):

1. Base map from ***Google Earth.***™

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SCALE IN FEET

ECOLOGICAL LAND SERVICES, INC.
1157 3rd Ave., Suite 220
Longview, WA 98632
Phone: (360) 578-1371 Fax: (360) 414-9305

DATE: 8/12/15
DWN: CDP
REQ. BY: RA
PRJ. MGR: TH
CHK:
PROJECT NO: 2255.01

Figure 2
SITE MAP
Parklands at Camas Meadows
Parklands at Camas LLC.
Camas, Clark County, WA
Section 28, Township 2 N, Range 3 E, W.M.

Figure 3
SOIL SURVEY MAP
Parklands at Camas Meadows
Parklands at Camas LLC.
Camas, Clark County, WA
Section 28, Township 2 N, Range 3 E, W.M.

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LEGEND:

CvA	Cove silty clay loam, 0 to 3 percent slopes. **Hydric**.
HcD	Hesson clay loam, 8 to 20 percent slopes. Not hydric.
HcB	Hesson clay loam, 0 to 8 percent slopes. Not hydric.
HcE	Hesson clay loam, 20 to 30 percent slopes. Not hydric.
LgB	Lauren gravelly loam, 0 to 8 percent slopes. Not hydric.

NOTE(S):

1. Map provided on-line by NRCS at web address:
   http://websoilsurvey.nrcs.usda.gov/app/

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Figure 4
NATIONAL WETLANDS INVENTORY MAP
Parklands at Camas Meadows
Parklands at Camas LLC.
Camas, Clark County, WA
Section 28, Township 2 N, Range 3 E, W.M.

DATE: 8/12/15
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Wetlands indicated onsite by US Fish & Wildlife Service.

LEGEND:

- Freshwater Forested/Shrub Wetland
- Riverine

R2UBH Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded.
PFOA Palustrine, forested, temporarily flooded.

NOTE(S):

1. Map provided on-line by US Fish & Wildlife Service at web address: *http://www.fws.gov/wetlands/data/index.html*

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Figure 5
CLARK COUNTY CRITICAL AREAS
Parklands at Camas Meadows
Parklands at Camas LLC.
Camas, Clark County, WA
Section 28, Township 2 N, Range 3 E, W.M.

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Wetlands indicated onsite by Clark County.

LEGEND:

Site Boundary

NOTE: Map provided on-line by Clark County, Washington at web address: *http://gis.clark.wa.gov/imf/imf.jsp?site=zoning*
This map combines NWI, mapped, permit and modeled wetlands in a single class. Identical to WETINV, except lacking its attribute data. Also excludes any of the modeled wetlands that were field verified to not possess wetland characteristics.

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APPENDIX A- WETLAND DETERMINATION DATA FORMS

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

Project/Site: Parklands at Camas Meadows City/County: Camas/Clark Sampling Date: 4/28/2015
Applicant/Owner: Parklands at Camas, LLC/Chinook Land Owners Group, LLC State: WA Sampling Point: TP-1
Investigator(s): T. Haderly & R.Allison Section, Township, Range: S28,T2N,R3E
Landform (hillslope, terrace, etc.): Terrace Local relief: Concave Slope (%): 20-30%
Subregion (LRR): A Lat: 45.3736 Long: -122.2654 Datum: NAD83
Soil Map Unit Name: HcE NWI classification: PFOA
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☒ No☐ (If no, explain Remarks.)
Are Vegetation☐, Soil☐, or Hydrology☐ significantly disturbed? Area "Normal Circumstances" present? Yes☐ No☒
Are Vegetation☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes☒ No☐
Hydric Soils Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☒ No ☐	

Remarks: Although hydric soils are not present, TP-1 is determined to be within a wetland due to a strong presence of hydrophytic vegetation and wetland hydrology indicators.

VEGETATION (*Use scientific names*)

Tree Stratum (Plot size:30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	20%	yes	FACW
2.	%		
3.	%		
4.	%		
Total Cover:	20%		
Sapling/Shrub Stratum (Plot size: 5 ft. radius)			
1. *Spiraea douglasii*	70%	yes	FACW
2. *Cornus sericea*	30%	yes	FACW
3.	%		
4.	%		
5.	%		
Total Cover:	100%		
Herb Stratum (Plot size: 5 ft radius)			
1. *Symplocarpus foetidu*	30%	yes	OBL
2. *Phalaris arundinacea*	10%	yes	FACW
3.	%		
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
Total Cover:	40%		
Woody Vine Stratum (Plot size: 30 ft radius)			
1.	%		
2.	%		
Total Cover:	%		

% Bare Ground in Herb Stratum 60%

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC _____ (A/B)

Prevalence Index worksheet

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

Prevalence Index = B/A=

Hydrophytic Vegetation Indicators:

- ☒ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 – Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data In Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes☒ No☐

Remarks:

SOIL

Sampling Point: TP-1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 2/2	100%		%			Clay	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

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

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

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

Indicators for Problematic Hydric Soils

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

[3]Indicators of hydrophytic vegetation and Wetland hydrology must be present

Restrictive Layer (if present):

Type: ____

Depth (inches):

Hydric Soil Present? Yes☐ No☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (min. of one required; check all that apply)

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

Secondary Indicators (2 or more required)

- ☐ Water Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D4

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (Inches):
Water Table Present?	Yes ☒	No ☐	Depth (Inches): 0
Saturation Present? (Includes Capillary fringe)	Yes ☒	No ☐	Depth (Inches): 0

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

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

Project/Site: Parklands at Camas Meadows City/County: Camas/Clark Sampling Date: 4/28/2015
Applicant/Owner: Parklands at Camas, LLC/Chinook Land Owners Group, LLC State: WA Sampling Point: TP-2
Investigator(s): T. Haderly & R.Allison Section, Township, Range: S28,T2N,R3E
Landform (hillslope, terrace, etc.): Terrace Local relief: Concave Slope (%): 0-3%
Subregion (LRR): A Lat: 45.3736 Long: -122.2654 Datum: NAD83
Soil Map Unit Name: CvA NWI classification: PFOA
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☒ No☐ (If no, explain Remarks.)
Are Vegetation☐, Soil☐, or Hydrology☐ significantly disturbed? Area "Normal Circumstances" present? Yes☐ No☒
Are Vegetation☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?** Yes☒ No☐
Hydric Soils Present?	Yes ☐	No ☒	
Wetland Hydrology Present?	Yes ☒	No ☐	

Remarks: Although hydric soils are not present, TP-1 is determined to be within a wetland due to a strong presence of hydrophytic vegetation and wetland hydrology indicators.

VEGETATION (*Use scientific names*)

Tree Stratum (Plot size:30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	20%	yes	FACW
2. *Alnus rubra*	20%	yes	FACW
3.	%		
4.	%		
Total Cover:	40%		

Sapling/Shrub Stratum (Plot size: 5 ft. radius)			
1. *Acer circinatum*	30%	yes	FAC
2. *Spiraea douglasii*	20%	yes	FACW
3.	%		
4.	%		
5.	%		
Total Cover:	50%		

Herb Stratum (Plot size: 5 ft radius)			
1. *Symplocarpus foetidus*	80%	yes	OBL
2. *Oenanthe sarmentosa*	15%	no	OBL
3. *Athyrium felix-femina*	5%	no	FAC
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
Total Cover:	100%		

Woody Vine Stratum (Plot size: 30 ft radius)			
1.	%		
2.	%		
Total Cover:	%		

% Bare Ground in Herb Stratum %

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

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

Prevalence Index worksheet

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

Prevalence Index = B/A=

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 – Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data In Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes☒ No☐

Remarks:

SOIL

Sampling Point: TP-2

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 2/2	%		%			Clay	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

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

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

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

Indicators for Problematic Hydric Soils

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

[3]Indicators of hydrophytic vegetation and Wetland hydrology must be present

Restrictive Layer (if present):

Type: ____

Depth (inches):

Hydric Soil Present? Yes☐ No☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (min. of one required; check all that apply)

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

Secondary Indicators (2 or more required)

- ☐ Water Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D4

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (Inches):
Water Table Present?	Yes ☒	No ☐	Depth (Inches): 0
Saturation Present? (Includes Capillary fringe)	Yes ☒	No ☐	Depth (Inches): 0

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

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

Project/Site: Parklands at Camas Meadows City/County: Camas/Clark Sampling Date: 4/28/2015
Applicant/Owner: Parklands at Camas, LLC/Chinook Land Owners Group, LLC State: WA Sampling Point: TP-3
Investigator(s): T. Haderly & R.Allison Section, Township, Range: S28,T2N,R3E
Landform (hillslope, terrace, etc.): Terrace Local relief: None Slope (%): 0-3%
Subregion (LRR): A Lat: 45.3736 Long: -122.2654 Datum: NAD83
Soil Map Unit Name: CvA NWI classification: PFOA
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☒ No☐ (If no, explain Remarks.)
Are Vegetation☐, Soil☐, or Hydrology☐ significantly disturbed? Area "Normal Circumstances" present? Yes☒ No☐
Are Vegetation☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes☐ No☒
Hydric Soils Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	

Remarks:

VEGETATION (*Use scientific names*)

Tree Stratum (Plot size:30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	20%	yes	FAC
2. *Pseudotsuga menziesii*	20%	yes	FACU
3.	%		
4.	%		
Total Cover:	40%		
Sapling/Shrub Stratum (Plot size: 5 ft. radius)			
1. ***Symphoricarpos albus***	**15%**	**yes**	FACU
2. *Holodiscus discolor*	15%	yes	FACU
3. *Gaultheria shallon*	15%	yes	FACU
4. Rubus parviflorus	15%	yes	FAC
5.	%	yes	FACU
Total Cover:	60%		
Herb Stratum (Plot size: 5 ft radius)			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
Total Cover:	%		
Woody Vine Stratum (Plot size: 30 ft radius)			
1. *Rubus armeniacus*	40%	yes	FACU
2.	%		
Total Cover:	40%		

% Bare Ground in Herb Stratum %

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC 13 (A/B)

Prevalence Index worksheet

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

Prevalence Index = B/A=

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 – Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data In Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes☐ No☒

Remarks:

SOIL

Sampling Point: TP-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/3	100%		%			Clay	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

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

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

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

Indicators for Problematic Hydric Soils

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

[3]Indicators of hydrophytic vegetation and Wetland hydrology must be present

Restrictive Layer (if present):

Type: ____

Depth (inches):

Hydric Soil Present? Yes☐ No☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (min. of one required; check all that apply)

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

Secondary Indicators (2 or more required)

- ☐ Water Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D4

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (Inches):
Water Table Present?	Yes ☐	No ☒	Depth (Inches):
Saturation Present? (Includes Capillary fringe)	Yes ☐	No ☒	Depth (Inches):

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

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

Project/Site: Parklands at Camas Meadows City/County: Camas/Clark Sampling Date: 4/28/15
Applicant/Owner: Parklands at Camas, LLC/Chinook Land Owners Group, LLC State: WA Sampling Point: TP-4
Investigator(s): T. Haderly & R.Allison Section, Township, Range: S28,T2N,R3E
Landform (hillslope, terrace, etc.): Terrace Local relief: Concave Slope (%): 0-3%
Subregion (LRR): A Lat: 45.3736 Long: -122.2654 Datum: NAD83
Soil Map Unit Name: CvA NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☒ No☐ (If no, explain Remarks.)
Are Vegetation☐, Soil☐, or Hydrology☐ significantly disturbed? Area "Normal Circumstances" present? Yes☒ No☐
Are Vegetation☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes☒ No☐
Hydric Soils Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	

Remarks:

VEGETATION (*Use scientific names*)

Tree Stratum (Plot size:30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	30%	yes	FACW
2. *Alnus rubra*	20%	yes	FAC
3.	%		
4.	%		
Total Cover:	50%		

Sapling/Shrub Stratum (Plot size: 5 ft. radius)			
1. *Cornus sericea*	20%	yes	FACW
2. *Rubus spectabilis*	15%	yes	FAC
3.	%		
4.	%		
5.	%		
Total Cover:	35%		

Herb Stratum (Plot size: 5 ft radius)			
1. *Oenanthe sarmentosa*	40%	yes	OBL
2. *Symplocarpus foetidus*	30%	yes	OBL
3. *Phalaris arundinacea*	30%	yes	FACW
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
Total Cover:	100%		

Woody Vine Stratum (Plot size: 5 ft radius)			
1.	%		
2.	%		
Total Cover:	%		

% Bare Ground in Herb Stratum %

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

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

Prevalence Index worksheet

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

Prevalence Index = B/A=

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 – Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data In Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes☒ No☐

Remarks:

SOIL

Sampling Point: TP-4

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 2/1	80%	10YR 3/6	20%	C	M	Clay silt loam	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

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

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

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

Indicators for Problematic Hydric Soils

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

[3]Indicators of hydrophytic vegetation and Wetland hydrology must be present

Restrictive Layer (if present):

Type: ____

Depth (inches):

Hydric Soil Present? **Yes☒ No☐**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (min. of one required; check all that apply)

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

Secondary Indicators (2 or more required)

- ☐ Water Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D4

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (Inches):
Water Table Present?	Yes ☒	No ☐	Depth (Inches): 0
Saturation Present? (Includes Capillary fringe)	Yes ☒	No ☐	Depth (Inches): 0

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

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

Remarks:

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

Project/Site: Parklands at Camas Meadows City/County: Camas/Clark Sampling Date: 4/28/2015
Applicant/Owner: Parklands at Camas, LLC/Chinook Land Owners Group, LLC State: WA Sampling Point: TP-5
Investigator(s): T. Haderly & R.Allison Section, Township, Range: S28,T2N,R3E
Landform (hillslope, terrace, etc.): Terrace Local relief: Convex Slope (%): 0-3%
Subregion (LRR): A Lat: 45.3736 Long: -122.2654 Datum: NAD83
Soil Map Unit Name: CvA NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☒ No☐ (If no, explain Remarks.)
Are Vegetation☐, Soil☐, or Hydrology☐ significantly disturbed? Area "Normal Circumstances" present? Yes☒ No☐
Are Vegetation☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes☐ No☒ Hydric Soils Present? Yes☐ No☒ Wetland Hydrology Present? Yes☐ No☒	**Is the Sampled Area within a Wetland?**	**Yes☐ No☒**

Remarks:

VEGETATION (*Use scientific names*)

Tree Stratum (Plot size:30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Corylus cornuta*	20%	yes	FACU
2.	%		
3.	%		
4.	%		
Total Cover:	20%		
Sapling/Shrub Stratum (Plot size: 5 ft. radius)			
1. *Holodiscus discolor*	10%	yes	FACU
2. *Oemleria cerasiformis*	5%	yes	FACU
3.	%		
4.	%		
5.	%		
Total Cover:	15%		
Herb Stratum (Plot size: 5 ft radius)			
1. *Galium trifidum*	40%	yes	FACW
2. *Polystichum munitum*	30%	yes	FACU
3. *Claytonia perfoliata*	10%	no	FAC
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
Total Cover:	80%		
Woody Vine Stratum (Plot size: 30 ft radius)			
1. *Rubus ursinus*	5%	yes	FACU
2.	%		
Total Cover:	5%		

% Bare Ground in Herb Stratum 20%

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 17 (A/B)

Prevalence Index worksheet

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

Prevalence Index = B/A=

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 – Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data In Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes☐ No☒

Remarks:

SOIL

Sampling Point: TP-5

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/3	100%		%			Silt loam	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

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

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

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

Indicators for Problematic Hydric Soils

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

[3]Indicators of hydrophytic vegetation and Wetland hydrology must be present

Restrictive Layer (if present):

Type: ____

Depth (inches):

Hydric Soil Present? Yes☐ No☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (min. of one required; check all that apply)

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

Secondary Indicators (2 or more required)

- ☐ Water Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D4

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (Inches):
Water Table Present?	Yes ☐	No ☒	Depth (Inches):
Saturation Present? (Includes Capillary fringe)	Yes ☐	No ☒	Depth (Inches):

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

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

Project/Site: Parklands at Camas Meadows | City/County: Camas/Clark | Sampling Date: 4/28/2015
Applicant/Owner: Parklands at Camas, LLC/Chinook Land Owners Group, LLC | State: WA | Sampling Point: TP-6
Investigator(s): T. Haderly & R.Allison | Section, Township, Range: S28,T2N,R3E
Landform (hillslope, terrace, etc.): Terrace | Local relief: Concave | Slope (%): 8-20%
Subregion (LRR): A | Lat: 45.3736 | Long: -122.2654 | Datum: NAD83
Soil Map Unit Name: HcD | NWI classification: PFOA
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☒ No☐ (If no, explain Remarks.)
Are Vegetation☐, Soil☐, or Hydrology☐ significantly disturbed? Area "Normal Circumstances" present? Yes☒ No☐
Are Vegetation☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes☒ No☐
Hydric Soils Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	

Remarks:

VEGETATION (*Use scientific names*)

Tree Stratum (Plot size:30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	20%	yes	FACW
2. *Acer macrophyllum*	10%	yes	FACU
3.	%		
4.	%		
Total Cover:	30%		

Sapling/Shrub Stratum (Plot size: 5 ft. radius)			
1. *Cornus sericea*	30%	yes	FACW
2.	%		
3.	%		
4.	%		
5.	%		
Total Cover:	30%		

Herb Stratum (Plot size: 5 ft radius)			
1. *Veratrum californicum*	40%	yes	FAC
2. *Oenanthe sarmentosa*	20%	yes	OBL
3. *Mentha arvensis*	10%	no	FACW
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
Total Cover:	70%		

Woody Vine Stratum (Plot size: 30 ft radius)			
1.	%		
2.	%		
Total Cover:	%		

% Bare Ground in Herb Stratum 30%

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80 (A/B)

Prevalence Index worksheet

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

Prevalence Index = B/A=

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 – Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data In Remarks or on a separate sheet)
- ☐ **Wetland Non-Vascular Plants**[1]
- ☐ **Problematic Hydrophytic Vegetation**[1] **(Explain)**

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

Hydrophytic Vegetation Present? Yes☒ No☐

Remarks:

SOIL

Sampling Point: TP-6

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 4/1	80%	2.5 YR 3/6	20%	C		Silt clay loam	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

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

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

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

Indicators for Problematic Hydric Soils

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

[3]Indicators of hydrophytic vegetation and Wetland hydrology must be present

Restrictive Layer (if present):

Type: ____

Depth (inches):

Hydric Soil Present? Yes☒ No☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (min. of one required; check all that apply)

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

Secondary Indicators (2 or more required)

- ☐ Water Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D4

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (Inches):
Water Table Present?	Yes ☒	No ☐	Depth (Inches): 4
Saturation Present? (Includes Capillary fringe)	Yes ☒	No ☐	Depth (Inches): 0

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

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

Project/Site: Parklands at Camas Meadows City/County: Camas/Clark Sampling Date: 4/28/2015
Applicant/Owner: Parklands at Camas, LLC/Chinook Land Owners Group, LLC State: WA Sampling Point: TP-7
Investigator(s): T. Haderly & R.Allison Section, Township, Range: S28,T2N,R3E
Landform (hillslope, terrace, etc.): Terrace Local relief: Convex Slope (%): 8-20%
Subregion (LRR): A Lat: 45.3736 Long: -122.2654 Datum: NAD83
Soil Map Unit Name: HcD NWI classification: PFOA
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☒ No☐ (If no, explain Remarks.)
Are Vegetation☐, Soil☐, or Hydrology☐ significantly disturbed? Area "Normal Circumstances" present? Yes☒ No☐
Are Vegetation☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes☐ No☒
Hydric Soils Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	

Remarks:

VEGETATION (*Use scientific names*)

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:30 ft radius)			
1. *Thuja plicata*	20%	yes	FAC
2. *Pseudotsuga menziesii*	20%	yes	FACU
3. *(non- native) Cedar sp.*	20%	yes	
4. *Acer macrophyllum*	10%	no	FAC
Total Cover:	70%		
Sapling/Shrub Stratum (Plot size: 5 ft. radius)			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
Total Cover:	%		
Herb Stratum (Plot size: 5 ft radius)			
1. *Saxifrage sp*	20%	yes	
2.	%		
3.	%		
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
Total Cover:	20%		
Woody Vine Stratum (Plot size: 30 ft radius)			
1. *Rubus armeniacus*	40%	yes	FACU
2.	%		
Total Cover:	40%		

% Bare Ground in Herb Stratum 40%

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20 (A/B)

Prevalence Index worksheet

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

Prevalence Index = B/A=

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 – Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data In Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes☐ No☒

Remarks:

SOIL

Sampling Point: TP-7

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/3	100%		%			Silt loam	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

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

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

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

Indicators for Problematic Hydric Soils

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

[3]Indicators of hydrophytic vegetation and Wetland hydrology must be present

Restrictive Layer (if present):

Type: ____

Depth (inches):

Hydric Soil Present? Yes☐ No☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (min. of one required; check all that apply)

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

Secondary Indicators (2 or more required)

- ☐ Water Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D4

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (Inches):
Water Table Present?	Yes ☐	No ☒	Depth (Inches):
Saturation Present? (Includes Capillary fringe)	Yes ☐	No ☒	Depth (Inches):

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

APPENDIX B- WETLAND RATING FORM AND FIGURES

Wetland name or number A,B & C

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetlands A,B & C Date of site visit: 4/28/2015

Rated by Rachel Allison Trained by Ecology? Yes No Date of training March 2015

HGM Class used for rating Depressional Wetland has multiple HGM classes? ___Y __X__N

NOTE: Form is not complete without the figures requested *(figures can be combined).*

Source of base aerial photo/map Google Earth (2014)

OVERALL WETLAND CATEGORY III (based on functions X or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 – 27

_____**Category II** – Total score = 20 – 22

__X__**Category III** – Total score = 16 – 19

_____**Category IV** – Total score = 9 – 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H (M) L	H (M) L	H (M) L	
Landscape Potential	H (M) L	H (M) L	H M (L)	
Value	H (M) L	H M (L)	H (M) L	TOTAL
Score Based on Ratings	6	5	5	16

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	I II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I II
Interdunal	I II III IV
None of the above	Not Applicable

Wetland name or number A,B & C

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet *(can be added to map of hydroperiods)*	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants *(can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number A,B &C

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

   (NO) – go to 2 **YES** – the wetland class is **Tidal Fringe** – go to 1.1

   1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

   NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

   (NO) – go to 3 **YES** – The wetland class is **Flats**
   *If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

   (NO) – go to 4 **YES** – The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
   ___The wetland is on a slope (*slope can be very gradual*),
   ___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
   ___The water leaves the wetland **without being impounded.**

   (NO) – go to 5 **YES** – The wetland class is **Slope**

   NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?
   ___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ___The overbank flooding occurs at least once every 2 years.

Wetland name or number A,B &C

(NO) – go to 6 **YES** – The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 (YES) – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

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

Wetland name or number A,B &C

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	1
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*. Yes = 4 No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > ½ of area points = 3 Wetland has persistent, ungrazed plants > $^1/_{10}$ of area points = 1 Wetland has persistent, ungrazed plants < $^1/_{10}$ of area points = 0	5
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	4
Total for D 1 Add the points in the boxes above	10

Rating of Site Potential If score is: ___ **12-16 = H** __X__ **6-11 = M** ___ **0-5 = L** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	0
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source: Nearby subdivision Yes = 1 No = 0	0
Total for D 2 Add the points in the boxes above	1

Rating of Landscape Potential If score is: ___ **3 or 4 = H** __X__ **1 or 2 = M** ___ **0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	1
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	0
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (*answer YES if there is a TMDL for the basin in which the unit is found*)? Yes = 2 No = 0	0
Total for D 3 Add the points in the boxes above	1

Rating of Value If score is: ___ **2-4 = H** __X__ **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number A,B &C

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?

D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	0
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	3
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire wetland is in the Flats class points = 5	3
Total for D 4 Add the points in the boxes above	6

Rating of Site Potential If score is: ___ **12-16 = H** __X__ **6-11 = M** ___ **0-5 = L** *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?

D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	0
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	1
Total for D 5 Add the points in the boxes above	2

Rating of Landscape Potential If score is: ___ **3 = H** __X__ **1 or 2 = M** ___ **0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?

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

Rating of Value If score is: ___ **2-4 = H** ___ **1 = M** __X__ **0 = L** *Record the rating on the first page*

Wetland name or number A,B &C

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

____Aquatic bed	4 structures or more: points = 4
__X__Emergent	3 structures: points = 2
__X__Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points = 1
__X__Forested (areas where trees have > 30% cover)	1 structure: points = 0

If the unit has a Forested class, check if:

__X__The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

4

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

____Permanently flooded or inundated	4 or more types present: points = 3
__X__Seasonally flooded or inundated	3 types present: points = 2
__X__Occasionally flooded or inundated	2 types present: points = 1
__X__Saturated only	1 type present: points = 0
____Permanently flowing stream or river in, or adjacent to, the wetland	
____Seasonally flowing stream in, or adjacent to, the wetland	
____**Lake Fringe wetland**	**2 points**
____**Freshwater tidal wetland**	**2 points**

2

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

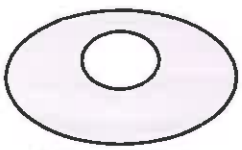
If you counted: > 19 species	points = 2
5 - 19 species	points = 1
< 5 species	points = 0

1

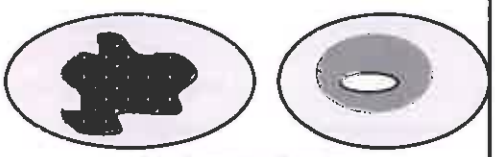
H 1.4. Interspersion of habitats

Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*

None = 0 points



Low = 1 point



Moderate = 2 points

All three diagrams in this row are **HIGH** = 3points

3

Wetland name or number A,B &C

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* __X__Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). __X__Standing snags (dbh > 4 in) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* __X__At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ____Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	**3**
Total for H 1 Add the points in the boxes above	**13**

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 7 + [(% moderate and low intensity land uses)/2] 7.5 = **14.5** % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	1
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 28 + [(% moderate and low intensity land uses)/2] 7.5 = **35.5** % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	0

Rating of Landscape Potential If score is:___**4-6 = H** ___**1-3 = M** __**X**__**< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?

H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.*

Site meets ANY of the following criteria: points = 2

- It has 3 or more priority habitats within 100 m (see next page)
- It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists)
- It is mapped as a location for an individual WDFW priority species
- It is a Wetland of High Conservation Value as determined by the Department of Natural Resources
- It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan

Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1

Site does not meet any of the criteria above points = 0

Rating of Value If score is:___**2 = H** __**X**__**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number A,B &C

WDFW Priority Habitats

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

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

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

— **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

X **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number A,B &C

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** (No) **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 2.2** (No) – Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** No = **Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf (Yes) – **Contact WNHP/WDNR and go to SC 2.4** No = **Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = **Category I** (No) = **Not a WHCV**	**Cat. I** **Note***
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** (No) – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** (No) = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** No = **Is not a bog**	**Cat. I**

Note: Contact was made with Joe Rocchio, Vegetation Ecologist, Washington Dept. of Natural Resources, Natural Heritage Program, on 6/15/2015. Mr. Rocchio confirmed the wetlands were not included in the list of Wetlands of High Conservation Value.

Wetland name or number A, B&C

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** (No) = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** (No) = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** (No) = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? **Yes = Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	**Not Applicable**

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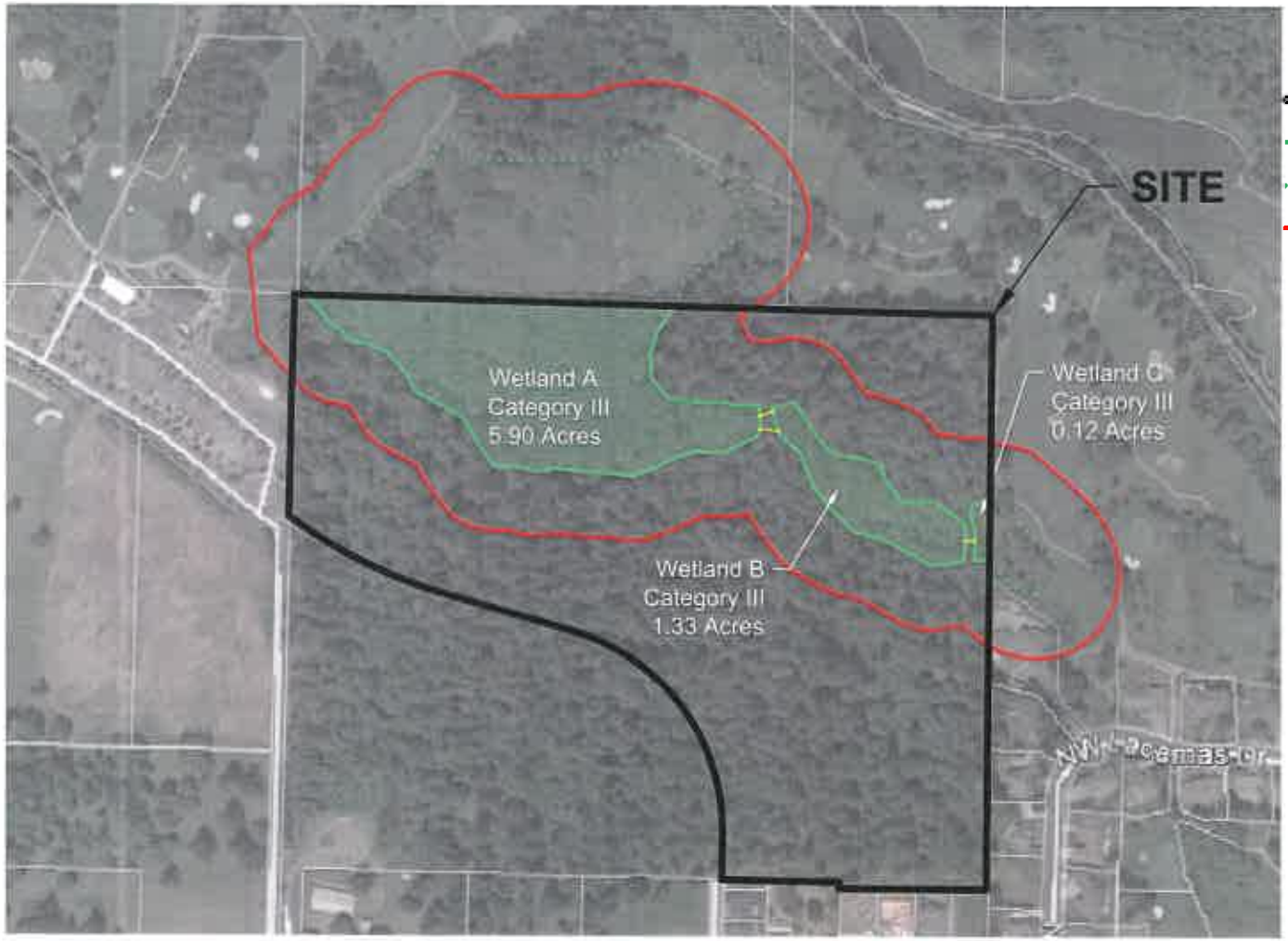

LEGEND:

- Site Boundary
- Onsite portion of Wetland unit
- Offsite portion of Wetland unit
- Wetland 150' offset

D 2.2->10% of area within 150ft. of wetland in land uses that generate pollutants.

D 5.2- <10% of area within 150ft. of the wetland in land uses that generate excess runoff.

NOTE(S):

1. Base map from ***Google Earth***.™

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Longview, WA 98632
Phone: (360) 578-1371 Fax: (360) 414-9305

DATE: 8/12/15
DWN: CDP
REQ. BY: RA
PRJ. MGR: TH
CHK:
PROJECT NO: 2255.01

Figure 6
150' OFFSET RATING FORM
Parklands at Camas Meadows
Parklands at Camas LLC.
Camas, Clark County, WA
Section 28, Township 2 N, Range 3 E, W.M.

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LEGEND:

- Site Boundary
- Onsite portion of Wetland Unit
- Offsite portion of Wetland Unit
- 1 KM Offset

Accessible Land Uses: 7%
Moderate/Low intensity land uses: 13%
Undisturbed Land Uses: 28%
High intensity land uses: 52%

H 2.1- Accessible habitat directly abutting wetland <10% of 1 KM polygon.
H 2.2- Undisturbed habitat within 1KM polygon (10-50% and in 1-3 patches).
H 2.3- >50% of 1KM polygon is high intensity land use.

NOTE(S):

1. Base map from ***Google Earth.***™

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Figure 7
1 KM OFFSET RATING FORM
Parklands at Camas Meadows
Parklands at Camas LLC.
Camas, Clark County, WA
Section 28, Township 2 N, Range 3 E, W.M.

Wetlands indicated onsite by US Fish & Wildlife Service.

LEGEND:

- Site Boundary
- Contributing Basin
- Freshwater Forested/Shrub Wetland
- Freshwater Emergent Wetland
- Riverine
- Freshwater Pond
- Lake

NOTE(S):

1. Map provided on-line by US Fish & Wildlife Service at web address: *http://www.fws.gov/wetlands/data/index.html*

Figure 8
CONTRIBUTING BASIN MAP
Parklands at Camas Meadows
Parklands at Camas LLC.
Camas, Clark County, WA
Section 28, Township 2 N, Range 3 E, W.M.

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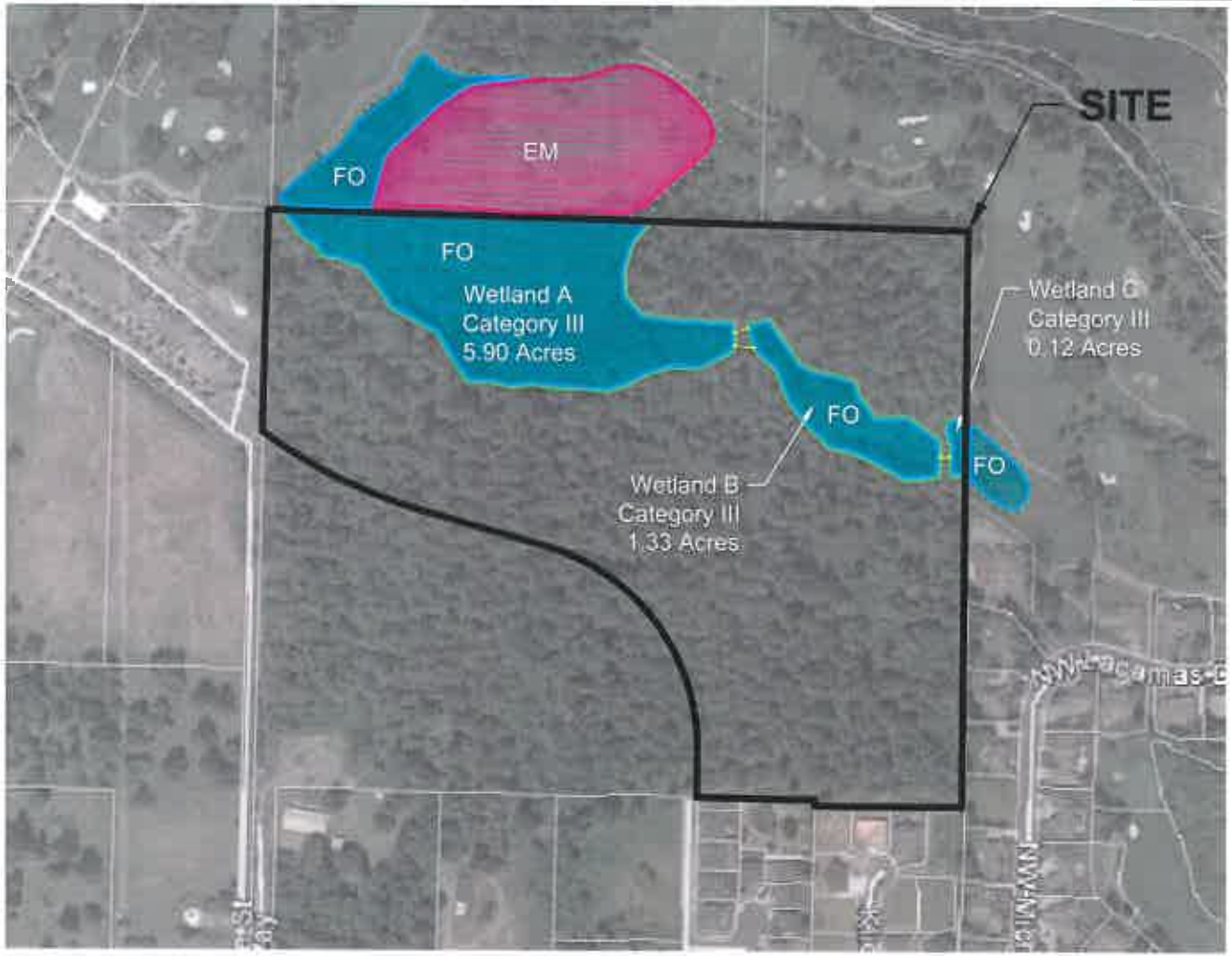

LEGEND:

- Site Boundary
- Onsite portion of Wetland Unit
- Offsite portion of Wetland Unit
- Cowardin Classes

FO- Forested
EM- Emergent

D 1.3- Wetland has persistent, ungrazed plants >95% of area.
D 4.3- The area of the contributing basin is 10-100 times the area of the unit.
D 5.3- >25% of the contributing basin of the wetland is covered with intensive human land uses.
H 1.1- Emergent, scrub-shrub, forested and forested class has 3 out of 5, strata (moss-ground cover, herbaceous, shrubs, canopy).
H 1.4- Moderately interspersed.

NOTE(S):

1. Base map from ***Google Earth.***™

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Figure 9
COWARDIN CLASSES MAP
Parklands at Camas Meadows
Parklands at Camas LLC.
Camas, Clark County, WA
Section 28, Township 2 N, Range 3 E, W.M.

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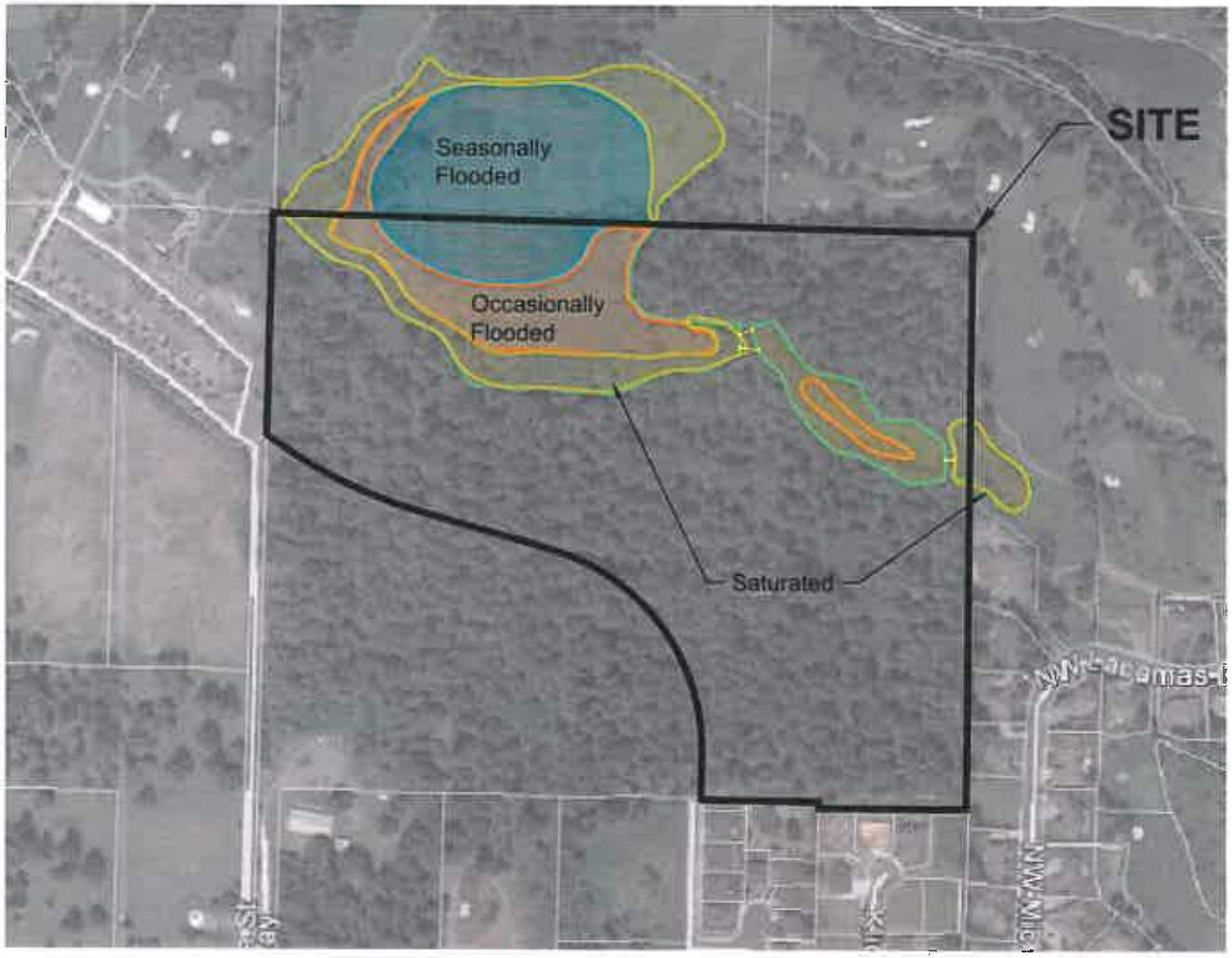

LEGEND:

- Site Boundary
- Wetland
- Saturated
- Occasionally Flooded
- Seasonally

D 1.1 Wetland has an unconstructed outlet.

D 1.4 Area seasonally ponded is >¼ of total wetland area.

H 1.2 Seasonally flooded or inundated occasionally flooded or inundated saturated only.

NOTE(S):

1. Base map from ***Google Earth***.™

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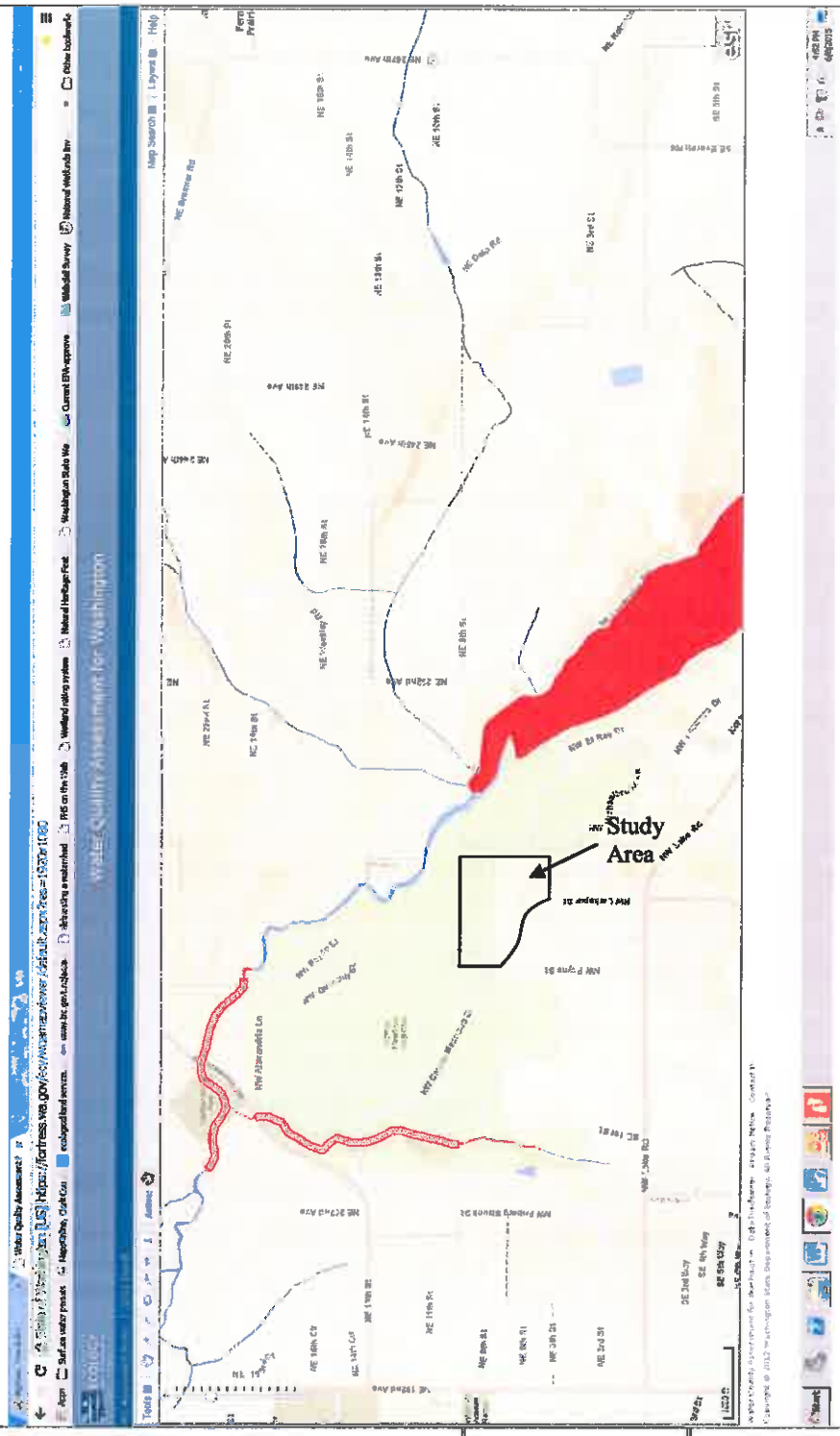
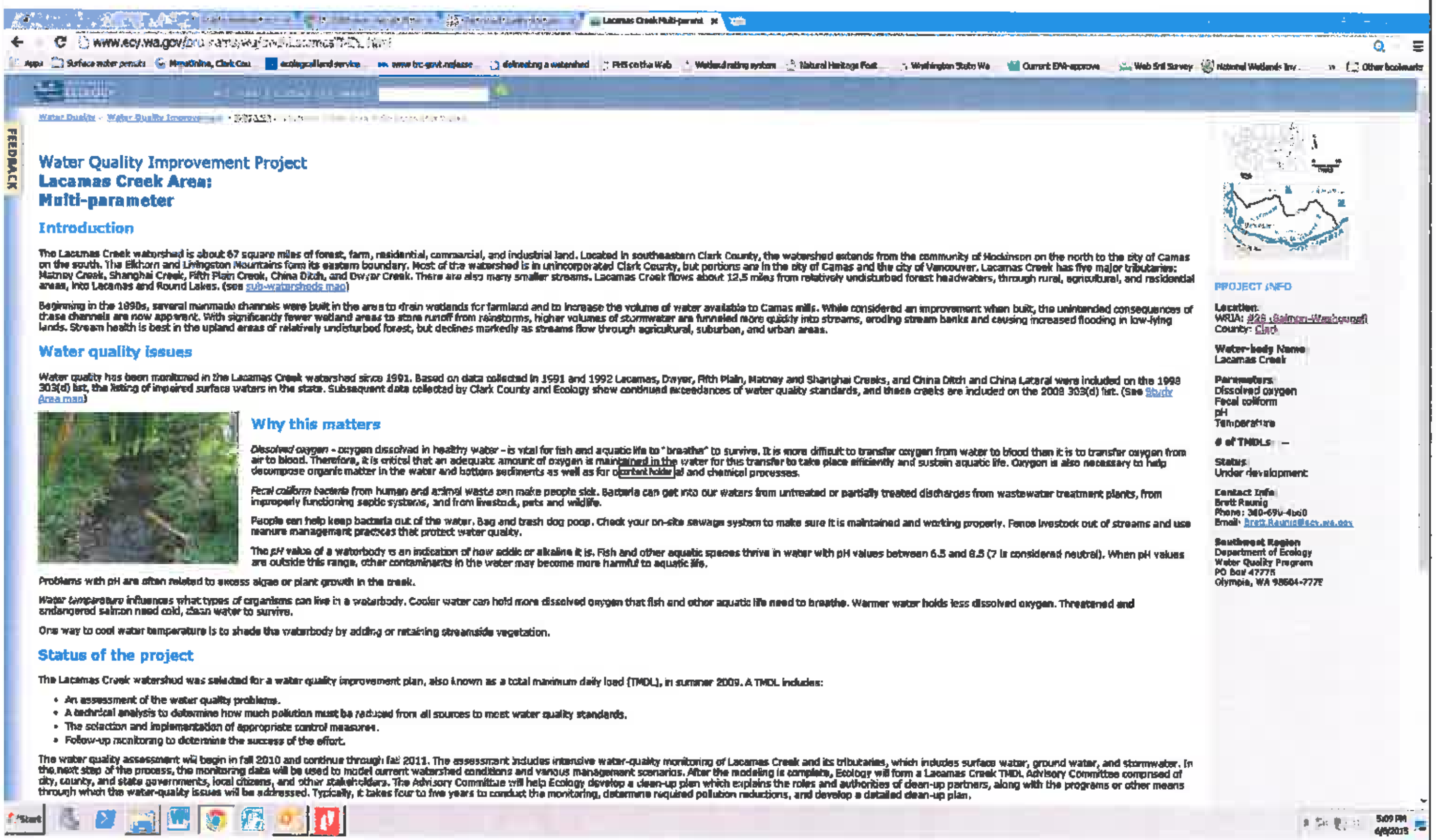
Figure 10
HYDROPERIODS MAP
Parklands at Camas Meadows
Parklands at Camas LLC.
Camas, Clark County, WA
Section 28, Township 2 N, Range 3 E, W.M.



Ecological Land Services	1157 3rd Ave., Suite 220A Longview, WA 98632 Phone: (360) 578-1371 Fax: (360) 414-9305	DATE: 6/9/15 DWN: LH PRJ. MGR: TH PROJ.#: 2255.01	Figure 11 303(d) Listed Waters in Basin



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FEEDBACK

Water Quality Improvement Project
Lacamas Creek Area:
Multi-parameter

Introduction

The Lacamas Creek watershed is about 67 square miles of forest, farm, residential, commercial, and industrial land. Located in southeastern Clark County, the watershed extends from the community of Hockinson on the north to the city of Camas on the south. The Elkhorn and Livingston Mountains form its eastern boundary. Most of the watershed is in unincorporated Clark County, but portions are in the city of Camas and the city of Vancouver. Lacamas Creek has five major tributaries: Matney Creek, Shanghai Creek, Fifth Plain Creek, China Ditch, and Dwyer Creek. There are also many smaller streams. Lacamas Creek flows about 12.5 miles from relatively undisturbed forest headwaters, through rural, agricultural, and residential areas, into Lacamas and Round Lakes. (see sub-watersheds map)

Beginning in the 1890s, several manmade channels were built in the area to drain wetlands for farmland and to increase the volume of water available to Camas mills. While considered an improvement when built, the unintended consequences of these channels are now apparent. With significantly fewer wetland areas to store runoff from rainstorms, higher volumes of stormwater are funneled more quickly into streams, eroding stream banks and causing increased flooding in low-lying lands. Stream health is best in the upland areas of relatively undisturbed forest, but declines markedly as streams flow through agricultural, suburban, and urban areas.

Water quality issues

Water quality has been monitored in the Lacamas Creek watershed since 1991. Based on data collected in 1991 and 1992 Lacamas, Dwyer, Fifth Plain, Matney and Shanghai Creeks, and China Ditch and China Lateral were included on the 1998 303(d) list, the listing of impaired surface waters in the state. Subsequent data collected by Clark County and Ecology show continued exceedances of water quality standards, and these creeks are included on the 2008 303(d) list. (See Study Area map)

Why this matters

Dissolved oxygen - oxygen dissolved in healthy water - is vital for fish and aquatic life to "breathe" to survive. It is more difficult to transfer oxygen from water to blood than it is to transfer oxygen from air to blood. Therefore, it is critical that an adequate amount of oxygen is maintained in the water for this transfer to take place efficiently and sustain aquatic life. Oxygen is also necessary to help decompose organic matter in the water and bottom sediments as well as for o[content holder]al and chemical processes.

Fecal coliform bacteria from human and animal waste can make people sick. Bacteria can get into our waters from untreated or partially treated discharges from wastewater treatment plants, from improperly functioning septic systems, and from livestock, pets and wildlife.

People can help keep bacteria out of the water. Bag and trash dog poop. Check your on-site sewage system to make sure it is maintained and working properly. Fence livestock out of streams and use manure management practices that protect water quality.

The *pH* value of a waterbody is an indication of how acidic or alkaline it is. Fish and other aquatic species thrive in water with pH values between 6.5 and 8.5 (7 is considered neutral). When pH values are outside this range, other contaminants in the water may become more harmful to aquatic life.

Problems with pH are often related to excess algae or plant growth in the creek.

Water temperature influences what types of organisms can live in a waterbody. Cooler water can hold more dissolved oxygen that fish and other aquatic life need to breathe. Warmer water holds less dissolved oxygen. Threatened and endangered salmon need cold, clean water to survive.

One way to cool water temperature is to shade the waterbody by adding or retaining streamside vegetation.

Status of the project

The Lacamas Creek watershed was selected for a water quality improvement plan, also known as a total maximum daily load (TMDL), in summer 2009. A TMDL includes:

- An assessment of the water quality problems.
- A technical analysis to determine how much pollution must be reduced from all sources to meet water quality standards.
- The selection and implementation of appropriate control measures.
- Follow-up monitoring to determine the success of the effort.

The water quality assessment will begin in fall 2010 and continue through fall 2011. The assessment includes intensive water-quality monitoring of Lacamas Creek and its tributaries, which includes surface water, ground water, and stormwater. In the next step of the process, the monitoring data will be used to model current watershed conditions and various management scenarios. After the modeling is complete, Ecology will form a Lacamas Creek TMDL Advisory Committee comprised of city, county, and state governments, local citizens, and other stakeholders. The Advisory Committee will help Ecology develop a clean-up plan which explains the roles and authorities of clean-up partners, along with the programs or other means through which the water-quality issues will be addressed. Typically, it takes four to five years to conduct the monitoring, determine required pollution reductions, and develop a detailed clean-up plan.

PROJECT INFO

Location:
WRIA: #28 Salmon-Washougal
County: Clark

Water-body Name
Lacamas Creek

Parameters
Dissolved oxygen
Fecal coliform
pH
Temperature

# of TMDLs: —

Status:
Under development

Contact Info:
Brett Raunig
Phone: 360-690-4660
Email: Brett.Raunig@ecy.wa.gov

Southwest Region
Department of Ecology
Water Quality Program
PO Box 47775
Olympia, WA 98504-7775

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Figure 12
TMDLs for WRIA in Unit

PHOTOPLATES 1 & 2

Photo 1: Southern border of Wetland A looking West.

Photo 2: TP6 in Wetland A.

Photo 3: Southern border of Wetland A looking East.

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Photoplate 1

Photo 4: Example of large ash tree in buffer.

Photo 5: Wetland B southern border looking northeast.

Photo 6: Photo of Himalayan blackberry in buffer.

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Photoplate 2