# May Creek Channel Restoration Project

**King County Water and Land Resources Division**

# Wetland Delineation Report


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# Executive Summary

King County Department of Parks and Natural Resources (DNRP) is proposing to improve flow conditions and fish passage along approximately 1,500 feet of May Creek between River Mile (RM) 4.3 and 4.8 in the May Valley located in southeastern King County near the cities of Renton and Newcastle. One large riverine wetland, referred to as May Creek #5 in the King County Wetland Inventory (1990), is located in the project study area. This wetland is approximately 140 acres in total size, and approximately 25 acres of it is contained in the project study area and was delineated for this report. The purpose of this wetland delineation was to identify the wetland boundary on the properties adjacent to May Creek where potential project impacts may occur. Wetland area was delineated on multiple site visits using the definitions, methods, and standards established in *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (U.S. Army Corps of Engineer 2008) and the *Washington State Wetlands Identification and Delineation Manual* (WDOE 1997).

May Creek #5 is a Category II riverine wetland with a 110 foot buffer, located in the natural 100-year floodplain of May Creek. While the wetland still received a high rating, it has been degraded over the years by adjacent farming and agricultural uses. Many areas of the wetland are actively mowed and used for grazing horses and other livestock. On the north side of the wetland, the wetland boundary closely follows a line of fill that appears to have been placed in wetland areas over the years to facilitate farm use. On the south side of the wetland, the wetland boundary more closely follows the natural valley topography.

The hydrology source to the wetland is a combination of overbank flooding from May Creek and a high groundwater table. Numerous groundwater seeps were identified on the valley walls. The wetland is primarily palustrine emergent with some scrub-shrub/forested components that are concentrated near May Creek. The vegetation in this wetland has been degraded by the adjacent farming and agricultural uses. Many areas of the wetland are actively mowed and used for grazing, and therefore contain pasture grasses that could not be accurately identified given the season (late January) and regular mowing. In a majority of the wetland areas not regularly mowed, the dominant vegetation was reed canarygrass (*Phalaris arundinacea),* which grew in thick blankets with almost 100 percent coverage. The only unmowed areas without reed canarygrass were in the scrub-shrub/forested components of the wetland where the reed canarygrass was shaded out.

This wetland, while fairly degraded due to adjacent land use practices, still received a Category II rating due to its high flood storage potential and opportunity, high opportunity to improve water quality, and its moderate potential to provide habitat to a variety of species. Any impacts to this wetland (permanent or temporary) resulting from this project will require mitigation as defined in the King County Critical Area Code (21A.24.340). Those impacts will be quantified later in the project design process in a separate report.

# 1 Introduction

King County Department of Parks and Natural Resources (DNRP) is proposing to improve flow conditions and fish passage along approximately 1,500 feet of May Creek between River Mile (RM) 4.3 and 4.9 in the May Valley (Sections 2 and 3, Township 23N, Range 5E) located in southeastern King County near the cities of Renton and Newcastle (Figure 1-1). Active horse pastures and farmland adjacent to May Creek are seasonally flooded and unusable due partially to ineffective flow capacity in this reach of May Creek. The reach of stream being investigated for potential improvement begins on the south side of SE May Valley Road approximately 0.1 mile downstream of 148th Avenue SE in Renton and includes the main stem of May Creek extending approximately 3,200 feet to a point just upstream from the confluence of May Creek with Indian Meadow Creek. Any project activities proposed in the stream will be completed in coordination with the adjacent property owners. One large riverine wetland, May Creek #5, is located in the study area, and is described in this report.

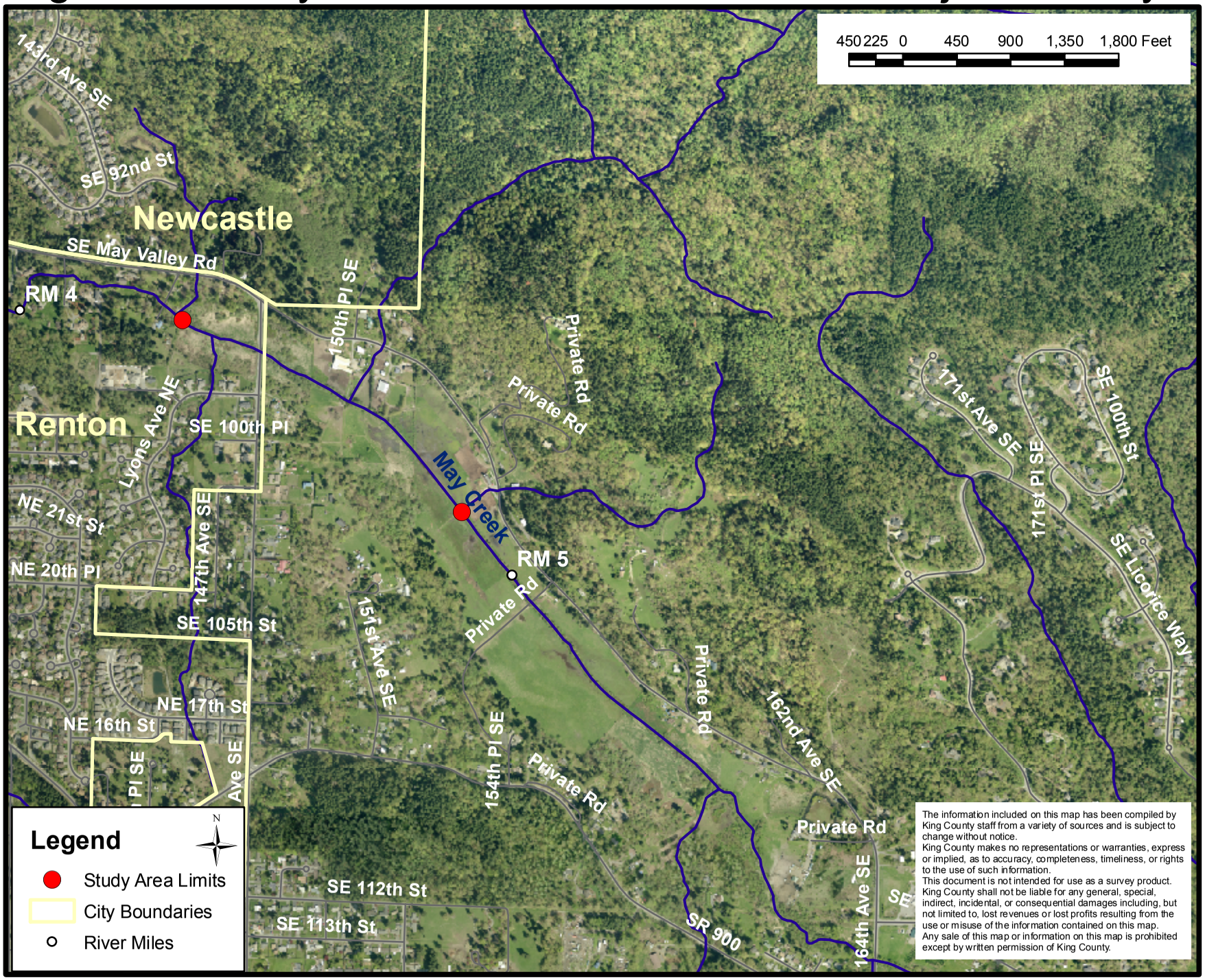
## *1.1 Study Objectives*

The purpose of this wetland delineation was to identify the wetland boundary on the properties adjacent to May Creek where potential project impacts may occur. Wetland area was identified and flagged during multiple sites visits using the definitions, methods, and standards established in *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (U.S. Army Corps of Engineer 2008) and the *Washington State Wetlands Identification and Delineation Manual* (WDOE 1997). This study was undertaken to meet permitting requirements for the U.S. Army Corps of Engineers (Corps), Washington State Department of Ecology (Ecology), and King County Department of Development and Environmental Services (DDES).

## *1.2 Study Area*

The study area is located in the Cedar River - Lake Washington Watershed, Water Resource Inventory Area (WRIA) 8. The study area includes the properties on the north and south sides of May Creek starting approximately 0.1 mile downstream of 148th Avenue SE (RM 4.3) and continuing upstream to approximately RM 4.9 (Figure 1-1). The wetland described in this report continues to the east and west outside of the project study area and is identified as May Creek #5 in the King County Wetland Inventory (King County 1990). According to the King County Wetland Inventory, the entire wetland is approximately 140 acres. The full 140 acre wetland boundary was not delineated as part of this study. The boundary was delineated only in the area where potential impacts may occur from the proposed project activities.

# Figure 1-1: May Creek Channel Restoration Project Vicinity




March 08, 2010

King County

# 2 Methods

The methods used to delineate and characterize the May Creek #5 wetland are described in this chapter.

## 2.1 Existing Literature Review

Prior to visiting the wetland site, ecologists carried out a review of relevant literature, surveys, studies and other works encompassing the cultural and ecological characteristics of the project vicinity and the wetland. Findings from historical topographic maps, aerial photographs, and other documents were incorporated into this report.

The following existing documentation was reviewed as part of this study:

- *May Creek Basin Action Plan* (King County 2001)
- *May Creek Drainage and Restoration Plan* (GeoEngineers Inc. 2008)
- *May Creek Erosion Stabilization Draft Report – May Creek Sediment Transport Study Phase 3* (Anchor QEA LLC 2010)
- King County Wetland Inventory (1990)
- Washington State Department of Natural Resources Natural Heritage Program (2009)
- U.S. Geologic Service (USGS) Topographic maps (1921)
- U.S. Department of Agriculture (USDA) National Resources Conservation Service (NRCS) Web Soil Survey for King County (2009)
- U.S. Fish and Wildlife Service National Wetland Inventory (USFWS 2010a)

## 2.2 Wetland Classification

Wetlands were classified using both the U.S. Fish and Wildlife Service (USFWS) Cowardin habitats (Cowardin et al. 1979), and Washington State's hydrogeomorphic systems (Brinson 1993 and Hruby et al. 1999).

### 2.2.1 USFWS Cowardin Classification

The USFWS Cowardin classification system (Cowardin et al. 1979) was developed as part of the National Wetlands Inventory (NWI) and used aerial photographs to identify and map wetlands to the greatest extent possible. This classification system identifies, gathers, and summarizes information on hydrologic, geomorphic, chemical and biological wetland characteristics. Specifically, water flow, water chemistry, substrate types, vegetation types, and dominant plant species are identified and characterized. Wetlands and their habitats are then classified based on the system (palustrine or estuarine, etc.), class (dominant life form of vegetation or physiography and composition of the substrate) and by the dominant vegetation stratum and physiographic modifiers present (Cowardin et al. 1979).

### 2.2.2 Hydrogeomorphic (HGM) Classification

The hydrogeomorphic (HGM) classification system (Brinson 1993 and Hruby et al. 1999) identifies and stratifies wetlands into hierarchical classes according to their differences or

similarities in wetland functions (Brinson 1993). The HGM classification system complements the USFWS Cowardian system by identifying and categorizing wetlands based on their geomorphic setting (e.g., position of the wetland in the landscape), the source of water for the wetland (e.g., river, lake), and on the flow and fluctuation of the water in the wetland (e.g., hydrodynamics).

## 2.3 Wetland Rating

The wetland within the project area was first characterized by its HGM class and then rated by the degree of hydrologic service, water quality enhancement, and habitat functions it provides using the wetland rating criteria referenced in the King County Critical Area Code (KCC 21A.318). King County adopts the Washington State's Department of Ecology: *Washington State Wetland Rating System for Western Washington* (Hruby 2004). In King County, wetlands are classified into Category I through IV based on the combination of each wetland's HGM class, rarity and sensitivity, and the cumulative point scores of specific, actual and/or potential, physiobiological functions they may provide based on the wetland characteristics and its surrounding landscape context. Category I wetlands provide the highest wetland function and are difficult to replace, while Category IV wetlands are degraded and disturbed wetlands providing limited function. The completed wetland rating form for May Creek #5 can be found in Appendix A.

## 2.4 Wetland Buffers

A fixed buffer width was subsequently assigned to the wetland based on the wetland's score in the rating system as defined in the King County Critical Area Code (KCC 21A.24.325). These buffer widths are further modified based on the wetland's location with respect to the Urban Growth Boundary, habitat functions performed, and the intensity of disturbance from adjacent land use (KCC 21A.24.325). Buffer widths are measured horizontally from the edge of the wetland boundary. Although King County Code stipulates specific fixed buffer widths, the code also allows incremental variations, buffer averaging and other variances from fixed standards based on site-specific features or the type of action anticipated. King County DDES is responsible for officially implementing the required buffer protection and/or approving variances from fixed widths.

## 2.5 Delineation Methods

King County ecologists visited the project site on five separate days (January 21, 26, and 28, 2010, February 24, 2010 and March 1, 2010) to delineate the wetland described in this report. They used the guidance provided in the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (U.S. Army Corps of Engineer 2008) and the *Washington State Wetlands Identification and Delineation Manual* (WDOE 1997) to delineate and characterize the wetland. Potential wetlands were first identified on the dominance of hydrophytic vegetation and both surface and subsurface hydrology. Then, a more detailed analysis of hydrology, soil, and vegetation were performed to confirm the presence of the wetland and its boundary. This analysis is described in more detail later in this section.

The information collected during these investigations was recorded on the Wetland Determination Data Form from the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (U.S. Army Corps of Engineer 2008). Completed data forms are attached in Appendix B.

Based on information from the three wetland field indicators (hydrology, soils, and vegetation), the boundaries of the wetland were flagged in the field (when possible) and the flag locations were recorded with a GPS unit (Trimble GeoXT Explorer). It was not possible to hang flags along the entire wetland boundary because some wetland areas extended into pastures with active horse use. When it was possible to enter a horse pasture, the GPS unit was used to note the wetland boundary points but no flags were hung.

### 2.5.1 Hydrology

Permanent or periodic inundation (where soil is saturated within the rooting zone at least seasonally) is the hydrologic force behind wetland formation. The presence of water for 12.5 percent or more of the growing season typically creates an anaerobic condition in the soil, which affects the types of plants that grow and the types of soils that develop (WDOE 1997).

Hydrological characteristics of the area were assessed to determine the hydrologic control (i.e., the determinants of inflow and outflow of water to and from the area) and the capability of the area to pond surface water. The presence of surface water, depth to groundwater, and depth to saturation was recorded at each soil pit location and can be found in the data forms in Appendix B. Other indicators of wetland hydrology included signs of lengthy inundation, unique drainage patterns, drift lines, watermarks on vegetation and other structures, sediment deposits, water-stained leaves, and hydrophytic vegetation (i.e., plants with morphological adaptations [e.g., adventitious roots] for survival in saturated soils).

### 2.5.2 Soil

Hydric soils are defined as soils that are flooded, ponded, or saturated long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile (WDOE 1997). Anaerobic conditions are created when flooding, ponding, or saturation is of sufficient duration to result in the absence of oxygen. These soils usually support hydrophytic vegetation.

A common indicator of hydric soil in this part of Washington is a “Depleted [Gray] Matrix” (U.S. Army Corps of Engineer, 2008). Hydric soil meeting this criteria must have a layer at least 6 inches thick starting within 10 inches of the mineral soil surface, and that has a depleted matrix with at least 60 percent of that layer having a chroma less than or equal to 2.

Soil pits were dug in representative locations throughout the wetland to characterize the soil and to determine the presence of hydric soil which helped identify the wetland boundary. The soil pits were dug to at least 18 inches in depth and the characteristics

were recorded on the data forms found in Appendix B. Soil auger holes, typically dug to at least 16 inches, were used in between soil pits to help establish the presence or absence of hydric soil indicators and to help identify or confirm wetland boundaries. Soil auger holes were also used in the pasture areas with active horse use, where large soil pits were not permitted.

The soil profile was described using the standard USDA NRCS Soil Conservation Service (1981) system. Soil texture and color was described using Munsell Soil Color charts assessed for hydric condition (Munsell 2009).

### 2.5.3 Vegetation

Hydrophytic vegetation is defined as plant life growing in water or soil, or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content (WDOE 1997). Vascular plants can be classified in five groups according to the plant's affinity for wetland areas (Reed 1988). These groups are described as follows:

- **Obligate Wetland (OBL)**: Occur almost always (estimated probability > 99 percent) under natural conditions in wetlands.

- **Facultative Wetland (FACW)**: Usually occur in wetlands (estimated probability 67 to 99 percent), but occasionally found in nonwetlands.

- **Facultative (FAC)**: Equally likely to occur in wetlands and nonwetlands (estimated probability 34 to 66 percent).

- **Facultative Upland (FACU)**: Usually occur in nonwetlands (estimated probability 67 to 99 percent), but occasionally found in wetlands (estimated probability 1 to 33 percent).

- **Obligate Upland (UPL)**: Occur in wetlands in another region, but occur almost always (estimated probability < 99 percent) under natural conditions in nonwetlands in the region specified.

An area has hydrophytic vegetation when more than 50 percent of the dominant species from all strata are OBL, FACW, and/or FAC species, which are on lists of plant species that occur in wetlands. When either all considered species are FAC or the number of species wetter than FAC equals the number of species drier than FAC, the wetland determination is based on soil and hydrology parameters. Other indicators of hydrophytic vegetation can also be considered in difficult situations. These include observed morphological adaptations of plants to an inundated or flooded environment or review of technical literature.

The dominance and locations of hydrophytic vegetation assisted in delineating the wetland boundaries. Vegetation plots were created and analyzed at the soil test pit locations and the vegetation at these locations was recorded on the data forms in Appendix B. The common and scientific plant names and indicator status (OBL, FACW,

etc.) used in this report are consistent with *A Field Guide to the Common Wetland Plants of Western Washington and Northwestern Oregon* (Cooke et al. 1997) unless updated by other works as noted.

# 3 Wetland Description

This section describes the existing conditions of the wetland located in May Valley, referred to as May Creek #5 in the King County Wetland Inventory (1990). The King County Wetland Inventory indicates that this wetland is approximately 140 acres. Approximately 25 acres of this wetland are contained within the project study area.

## *3.1 Landscape Setting*

May Creek #5 is a riverine wetland located in the mapped 100-year floodplain of May Creek (WRIA Stream #08.0282). May Creek is a 7-mile stream in the Lake Washington Watershed (WRIA 8). The stream originates in the steep forested slopes of Cougar and Squak Mountains, and flows northwesterly eventually draining into the southern portion of Lake Washington. In the project study area May Creek flows through May Valley, a natural floodplain that has historically been prone to flooding. The May Creek #5 wetland covers the majority of the May Valley.

According to the *May Creek Current and Future Conditions Report* (King County 1995) May Creek has been channelized and dredged throughout the May Valley since at least 1936. King County continued to dredge May Valley in the 1940's and deposited the material onto the surrounding properties. This dredging reduced the duration and extent of flooding in the May Valley and allowed property owners to use the land for agriculture and grazing livestock. Regular dredging appears to have ceased sometime after the 1940's due to increasing protection of sensitive areas. Today, the majority of the properties in the May Valley are rural residential with active agriculture and grazing; however, the lack of dredging activities over the last 50 years means that May Valley is once again experiencing prolonged periods of flooding during the wet season. This flooding limits the amount of area that residents can use for agriculture and grazing. During the wet season, horses and other livestock are either moved to areas located on the higher valley slopes or to areas that appear to have been raised out of the floodplain (over many years) with fill. While the current extent of the flooding limits horse pasture use, it is likely that it is closer to natural historical conditions pre-development.

In the northeast quadrant of the study area, where farm use is the most pronounced, the wetland boundary closely follows the fence line associated with the horse pastures. Over the years, fill appears to have been placed in the wetland to increase usable farm area. The wetland boundary in the southeast quadrant of the study area is also located in horse pastures, but more closely follows the natural valley topography (Figure 3-1).

In the undeveloped area in the northwest quadrant of the study area, the wetland boundary extends into the scrub-shrub/forested areas located at the toe of the valley wall, with one exception; In the most northwestern quadrant of the study area it appears that fill was placed in the wetland many years ago to accommodate a home that no longer exists (Figure 3-2). Remnants of the old buildings can be seen in this area.

The wetland boundary in the undeveloped areas in the southwestern quadrant of the study area, closely follows the topography and is easily visible by a change in vegetation (reed

canarygrass (*Phalaris arundinacea)* to Himalayan blackberry (*Rubus procerus*). In a small area directly west side of 148th Avenue NE it appears that fill was placed in the wetland. The boundary in this area is irregular (it does not follow the natural topography) and is demarcated by large patches of scotch broom (*Cytisus scoparius*) and an unknown pasture grass (Figure 3-2).

## 3.2 Hydrology

The primary source of hydrology to the May Creek #5 wetland is a combination of overbank flooding and a high groundwater table. Multiple groundwater seeps were visible on the valley walls at higher elevations. Two tributaries flow south off the northern hillside and one tributary flows north from the southern side of the project area, providing additional sources of hydrology. Many areas of this wetland are frequently flooded (at least once every 2 years) by May Creek, and therefore May Creek #5 would be classified as a riverine wetland using HGM system (Hruby 2004). It should be noted that riverine wetlands also commonly receive significant amounts of water from other sources such as groundwater and slope discharges (Hruby 2004) as is the case in the May Valley.

A wetland hydroperiod is the period of time during which the wetland is covered by water. Hydroperiods in this wetland include areas that are seasonally flooded and areas that appear to be only occasionally flooded at higher elevations. At even higher elevations along the valley walls, soil is saturated and hydrology is driven by primarily groundwater seeps. Overbank flooding in these higher areas is limited.

Wetland Soil Pit #1 (Figure 3-2) was located on the south side of May Creek on the east side of 148th Avenue SE approximately 35 feet from the stream. Indicators of hydrology at this location included visible observation of surface water (within 10 feet of the soil pit) high water table (present at 8 inches below the surface), soil saturated to the surface, water marks, and water stained leaves. Based on the strong hydrology indicators at this location, it was assumed that hydrology would be present at this location and in locations at a similar elevation throughout the growing season.

Wetland Soil Pit #3 (Figure 3-1) was located on the south side of May Creek on the eastern side of the study area at a higher elevation than the first pit. This area does not appear to receive regular overbank flooding due to its elevation; however other indicators of hydrology included a high water table (present 5.5 inches below the ground surface), and soil saturated to the surface. Groundwater seeps were also identified nearby at similar elevations.

Wetland Soil Pit #4 (Figure 3-2) was located on the north side of May Creek on the east side of 148th Avenue SE. Indicators of hydrology in this area included a high water table (present 4.5 inches below the ground surface), soil saturation to the surface, water marks, algal mat, water-stained leaves, a hydrogen sulfide odor, and oxidized rhizospheres along living roots.

Wetland Soil Pit #6 (Figure 3-2) was located on the north side of May Creek and on the west side of 148th Avenue SE. This area is probably too far from the stream to receive regular overbank flooding, but indicators of hydrology in this location include a high water table (present 9 inches below the ground surface) and soil saturated to the surface.

Wetland Soil Pit #7 (Figure 3-2) was located on the south side of May Creek and on the west side of 148th Avenue SE. This area probably receives overbank flooding from May Creek during annual storm events. Indicators of hydrology on the field day included a high water table (present 12 inches below the surface) and saturated soil to the surface.

A soil pit was not dug in the northeastern quadrant of the study area because the wetland area extended into active horse pastures (Figure 3-1). In these areas hydrology indicators included visual observation of surface water (seeps), water marks, water stained leaves, and a high water table that was observable using a soil auger.

Upland Soil Pits #2 and #5 (Figure 3-2), near Wetland Soil Pits #1 and #5 respectively, did not contain any hydrology indicators. The water table was not present at 18 inches below the surface, and the soil was not saturated.

## *3.3 Soils*

The NRCS Web Soil Survey (2009) indicates that Bellingham silty loam (Bh) is found at the lower elevations in the May Valley (Figure 3-3). The Ragnar-Indianola association (RdC) is found on the higher elevations on the south side of the May Valley, and Alderwood gravelly sandy loam (AgC and AgD) is found on the north side of May Valley. Alderwood gravelly sand loam (AgC) and Bellingham silty loam (Bh) are both on the NRCS hydric soil list for Washington State. Field visits confirmed the presence of these hydric soils in the May Valley. In addition, the field visits found a thick layer of clay in the western half of the study area.

Wetland Soil Pit #1 contained one uniform soil horizon from 0 to 18 inches below the surface. The soil was a black clay (10YR 2/1) with redoximorphic (redox) features (soil mottling) that were too small to color. Redox features are soil properties, associated with wetness, which results from the reduction and oxidation of iron and manganese compounds in the soil after water saturation and desaturation, respectively. Soil *mottles* are commonly identified redox features. The redox features were concentrations covering about 1 percent of the matrix. This soil meets the criteria F3 for hydric soil (depleted matrix with a layer at least 6 inches thick starting within 10 inches of the mineral soil surface).

Wetland Soil Pit #3 contained three soil horizons. The first horizon (from 0 to 6.5 inches) was a black loamy sand (5YR 2.5/1) without redox features. This soil meets the criteria F3 for hydric soil (depleted matrix with a layer at least 6 inches thick starting with 10 inches of the mineral soil surface). The second horizon (from 6.5 to 11.5 inches) was a yellowish brown silty loam (10YR 5/4) with redox features in approximately 10 percent of the matrix. The third horizon (11.5 inches to 18 inches) was a dark yellowish brown silty loam (10YR 4/6) without any redox features. The second two horizons did not meet

the criteria for hydric soil; however, since the first horizon met the criteria for hydric soil, this sampled area was determined to be inside the wetland.

Wetland Soil Pit #4 also contained three soil horizons. The first horizon (0 to 8.5 inches) was a black clay (10 YR 2/1) without any redox features. The second horizon (8.5 to 13.5 inches) was also a black clay (2.5 YR 2.5/1) with 50 percent coverage of redox features. The third horizon (13.5 to 18 inches) was again a black clay (10YR 2/1) without any redox features. This soil meets the criteria F3 for hydric soil (depleted matrix with a layer at least 6 inches thick starting with 10 inches of the mineral soil surface).

Wetland Soil Pit #6 contained two soil horizons. The first horizon (0 to 5 inches) was the same black clay (10 YR 2/1) without redox features that was observed in Soil Pit #4. The second horizon (5 to18 inches) was the same black clay but it contained faint redox feature in about 20 percent of the matrix. This soil meets the criteria F3 for hydric soil (depleted matrix with a layer at least 6 inches thick starting with 10 inches of the mineral soil surface).

Wetland Soil Pit #7 had a two inch duff layer that was followed by one uniform horizon (2 to 18 inches). This horizon was a very dark grayish brown (10YR 3/2) clay layer with yellowish red redox features (5 YR 5/8) in 20 percent of the matrix. This soil meets the criteria F3 for hydric soil (depleted matrix with a layer at least 6 inches thick starting with 10 inches of the mineral soil surface).

Soil pits were not dug in the northeastern quadrant of the study area because the wetland area extended into active horse pastures. In these areas, the soil was sampled using a soil auger and examined for hydric indicators. The soil in this area had similar characteristics as what was recorded for Soil Pit #3.

Upland Soil Pits #2 and #5, near Wetland Soil Pits #1 and #5 respectively, did not contain any indicators of hydric soil. The soil chroma (3 and 4) was too high to meet the criteria for a depleted matrix, and the soil did not exhibit any other hydric indictors.

## 3.4 Vegetation

According to the NWI, May Creek #5 is a palustrine wetland with primarily emergent vegetation. This is consistent with what was found in the field; however, in addition, many portions of the wetland immediately adjacent to May Creek also contain a scrub-shrub vegetation component. A smaller portion of the wetland could be considered forested (Figure 3-4).

The vegetation in this wetland has been degraded by adjacent farming and agricultural uses. Many areas of the wetland are actively mowed and used for grazing, and therefore contain pasture grasses that could not be accurately identified given the season (late January) and regular mowing. In a majority of the wetland areas not regularly mowed, the dominant vegetation was reed canarygrass which grew thick blankets with almost 100 percent coverage. On the western side of the wetland, hardhack (*Spirea douglasii*) out-

competed the reed canarygrass is some areas. The only unmowed areas without reed canarygrass were in the scrub-shrub/forested components of the wetland where the reed canarygrass was shaded out. The dominant vegetation in the scrub-shrub/forested portions of the wetland were willow species (*Salix spp*.), red alder (*Alnus rubra)*, and Oregon ash (*Fraxinus latifolia)*. A portion of the scrub-shrub vegetation along May Creek was planted in the past 10 years by King County DNRP to improve riparian coverage and shade out the reed canarygrass. A complete list of the vegetation identified in the wetland is shown in Table 3-1 with its Latin name, common name, wetland indicator status, and whether or not it was a dominate species in any of the areas surveyed. A species was considered dominant if it had at least 20 percent absolute coverage within its stratum.

**Table 3-1: Wetland Vegetation Identified in May Creek #5**

| Latin Name | Common Name | Dominant | Indicator Status |
|---|---|---|---|
| **Herb Stratum** | | | |
| *Carex obnupta* | slough sedge | No | OBL |
| *Equisetum telmateia* | giant horsetail | No | FACW |
| *Juncus effusus* | soft rush | Yes | FACW |
| *Lysichitum americananum* | skunk cabbage | No | OBL |
| *Phalaris arundinacea* | reed canarygrass | Yes | FACW |
| *Polystichum munitum* | sword fern | No | FACU |
| *Ranunculus repens* | creeping buttercup | No | FACW |
| *unknown* | moss | Yes | unknown |
| *unknown* | various pasture grasses | Yes | unknown |
| **Shrub/Vine Stratum** | | | |
| *Amelanchier alnifolia* | Saskatoon serviceberry | Yes | FACU |
| *Cornus sericea* | red-osier dogwood | No | FACW |
| *Oemleria cerasiformis* | Indian plum | Yes | FACU |
| *Physocarpus capitatus* | Pacific ninebark | No | FACW |
| *Rosa pisocarpa* | peafruit rose | Yes | FAC |
| *Rubus procerus* | Himalayan blackberry | Yes | FACU |
| *Rubus spectabilis* | Salmonberry | Yes | FAC |
| *Salix hookeriana* | Hooker's willow | Yes | FACW |
| *Salix lasiandra* | Pacific willow | Yes | FACW |
| *Salix scouleriana* | Scouler's willow | Yes | FAC |
| *Salix sitchensis* | sitka willow | Yes | FACW |
| *Spirea douglasii* | hardhack | Yes | FACW |
| *Symphoricarpos albus* | snowberry | No | FACU |
| **Tree Stratum** | | | |
| *Alnus rubra* | red alder | Yes | FAC |
| *Fraxinus latifolia* | Oregon ash | Yes | FACW |
| *Picea sitchensis* | Sitka spruce | No | FAC |
| *Prunus spp.* | Cherry | Yes | FACU |
| *Pseudotsuga menziesii* | Douglas fir | Yes | FACU* |
| *Thuja pliclata* | Western red cedar | Yes | FAC |
| *unknown* | ornamental fruit trees | No | unknown |

*Identifies a tentative assignment based on conflicting reviews

Upland vegetation in the wetland buffer included ornamental maple (*Acer sp*.), Indian plum (*Oemleria cerasiformis),* beaked hazelnut (*Corylus cornuta*), unknown fruit trees, Himalayan blackberry, sword fern (*Polystichum munitum*), bracken fern (*Pteridium aquilinum*), tall fescue (*Festuca arundinacea),* orchard grass (*Datctylis glomerata*), bentgrass (*Agrostis sp.*), scotch broom, and unknown thistle species.

## 3.5 Wetland Rating

The wetland in the study area was rated as one unit using the *Washington State Wetland Rating System for Western Washington* (Hruby 2004). According to the guidance in the rating system, when a stream that is less than 50 feet wide bisects a contiguous vegetated wetland, wetland area on both sides of the stream should be treated as a single unit (Hruby 2004). Additionally, even though the wetland is divided by 148th Avenue SE, the wetland was not divided into separate units for the purposes of the rating system because there is a level surface-water connection (May Creek) between the two parts of the wetland (Hruby 2004).

Under the *Washington State Wetland Rating System for Western Washington,* May Creek #5 is a Category II riverine wetland scoring 61 out of 100 points (Appendix A). The wetland provides moderate water quality function (scoring 14 points).

The wetland has high opportunity to improve water quality due to the close proximity of grazing, roadways, and residential development; however, its potential to improve water quality is only moderate due to a lack of ungrazed herbaceous vegetation and trees/shrubs in the wetland.

The wetland provides high hydrologic function (scoring 26 points). The wetland has the opportunity to reduce flooding and erosion due to the roads and bridges downstream, as well as potential salmon habitat. In addition, due to the large amount of available flood storage it also has a high potential to reduce flooding and erosion.

The wetland provides moderate habitat function (scoring 21 points). The wetland has high potential to provide habitat for many species because it is large enough (over 140 acres) to contain multiple vegetation classes, hydroperiods, and a richness of plant species. On the other hand, the opportunity that this wetland has to provide habitat is limited due to disturbed buffers and active grazing adjacent to much of the wetland, as well as disturbed connections to other vegetated corridors or wetlands. Wildlife observations in the study area during the wetland survey included over 25 species of birds, including great blue heron (*Ardea herodias*) and red-tailed hawk (*Buteo jamaicensis*), as well as Columbia black-tailed deer (*Odocoileus hemionus columbianus*), raccoon (*Procyon lotor*) and coyote (*Canis latrans*).

This wetland rating is preliminary and should not be considered final until King County DDES has reviewed and approved this report.

## 3.6 Wetland Buffer

The buffer for this wetland would be 110 feet according King County Code 21A.24.325. The wetland buffer is determined by using the wetland rating (Category II), in conjunction with the wetland habitat score (21 points), and the adjacent land use (moderate impact). Moderate adjacent impact land use is assumed due to agricultural use on some of the adjacent properties without an approved farm management plan. Two of the farms adjacent to the wetland have farm management plans, but the other farms and properties do not. In addition, the majority of the wetland buffer contains paved areas, buildings, and pastures. These areas provide limited wetland buffer function.

This wetland buffer is preliminary should not be considered final until King County DDES has reviewed and approved this report.

## 3.7 Wetland Mitigation Ratios

King County Code 21A.24.340 defines mitigation replacement ratios to compensate for adverse effects to a wetland or its buffer. The mitigation replacement ratio is based on the wetland category of the impacted wetland and the type of mitigation proposed to compensate for the impact. King County Code also adjusts mitigation replacement ratios based on the type of impact (permanent or temporary). A permanent impact would be placing permanent fill in the wetland or permanently dewatering a portion of wetland. A temporary impact would be conversion of a scrub-shrub/forested wetland to an emergent wetland, or temporary vegetation removal associated with construction activities. Alterations to a wetland buffer require compensation at a simple 1:1 ratio (i.e., 1 acre of mitigation for every 1 acre of impact).

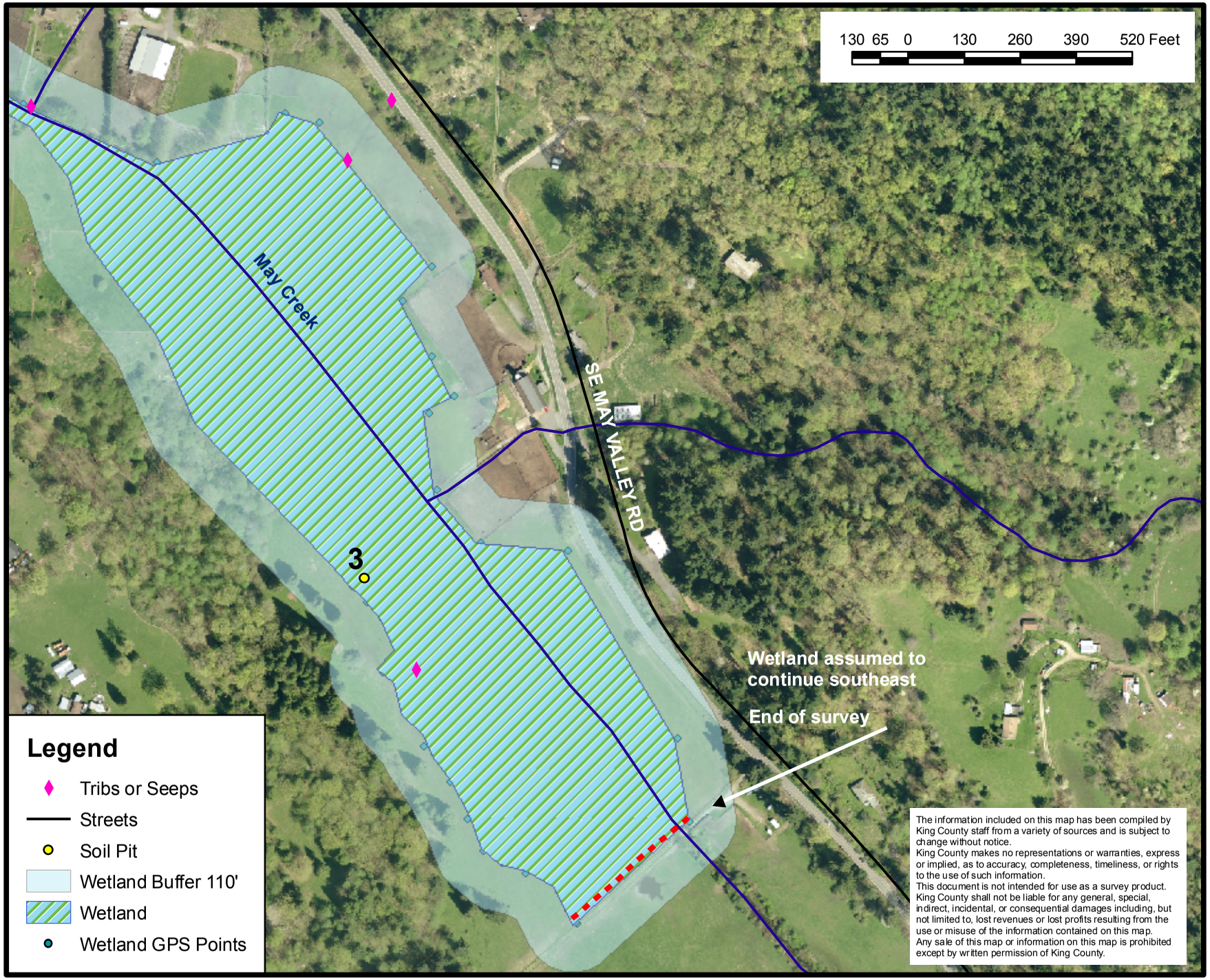
Table 3-2 summarizes the mitigation replacement ratios for Category II wetlands according to King County Code 21A.24.340.

The impacts resulting from the project activities, as well as any required mitigation will be analyzed in a separate report.

**Table 3-2: Mitigation Ratios for Category II Wetlands in King County (KCC 21A.24.340)**

| Impact Type | Mitigation Type | | | |
|---|---|---|---|---|
| | Wetland reestablishment or creation | Wetland rehabilitation | 1:1 Wetland reestablishment or wetland creation (R/C) and wetland enhancement (E) | Wetland enhancement only |
| Permanent fill or dewatering | 3:1 | 8:1 | 1:1 R/C and 4:1 E | 12:1 |
| Conversion of forested/scrub-shrub to emergent | 1.5:1 | 2:1 | N/A | 3:1 |
| Temporary construction impacts | 0.75:1 | 1:1 | N/A | 1.5:1 |

# Figure 3-1: May Valley Wetland Delineation in East Study Area

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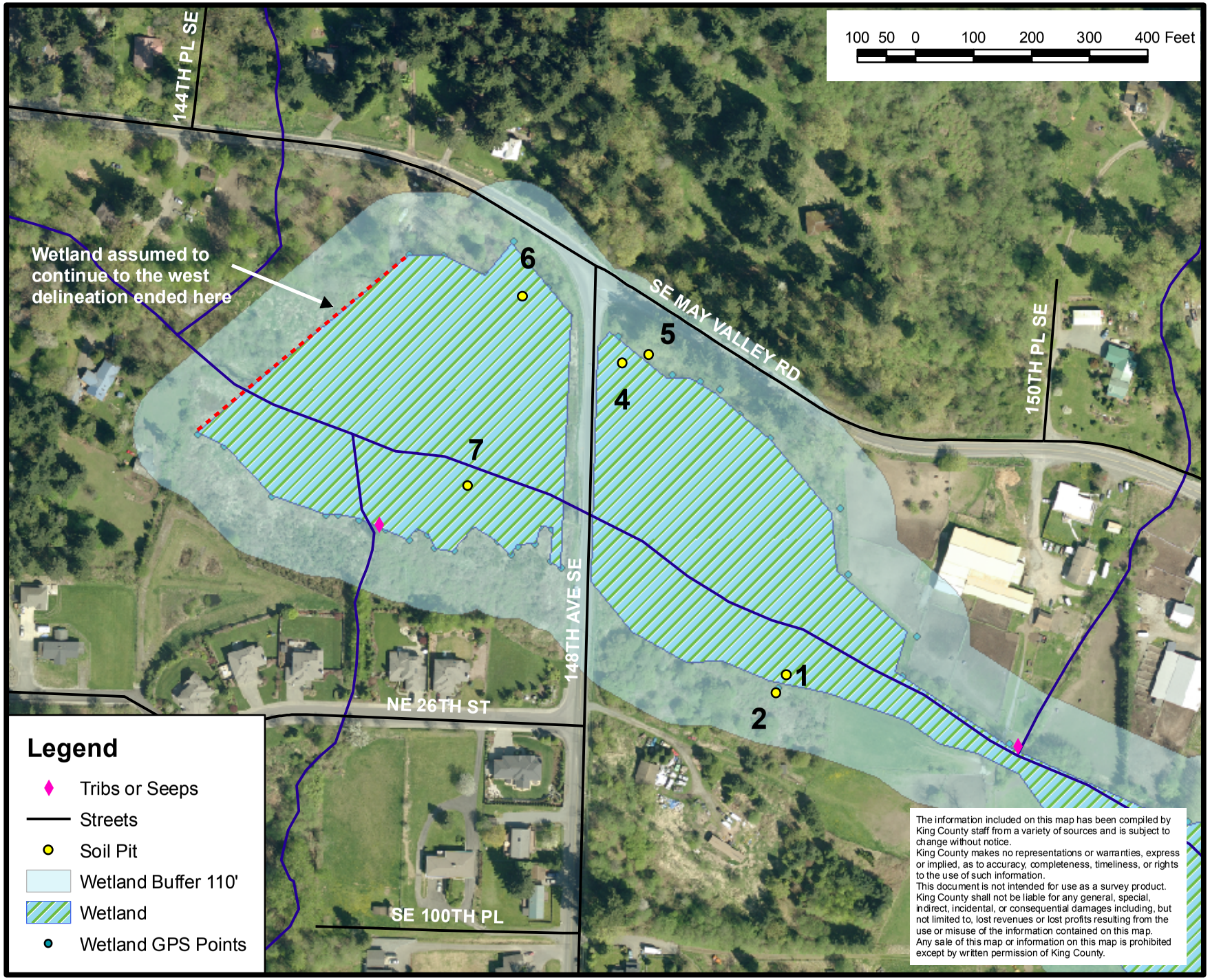
# Figure 3-2: May Valley Wetland Delineation in West Study Area

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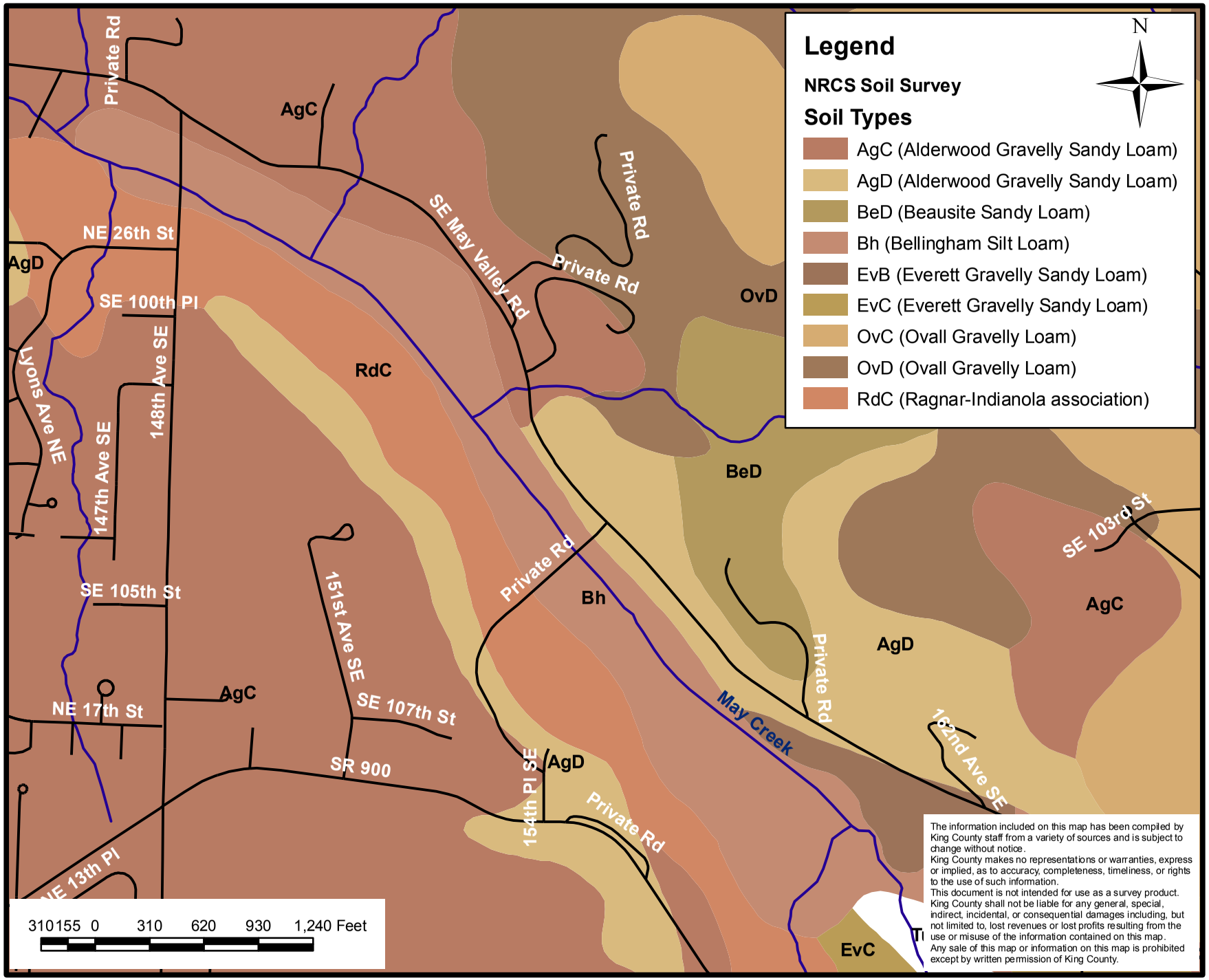
# Figure 3-3: NRCS Soil Survey Map of May Valley

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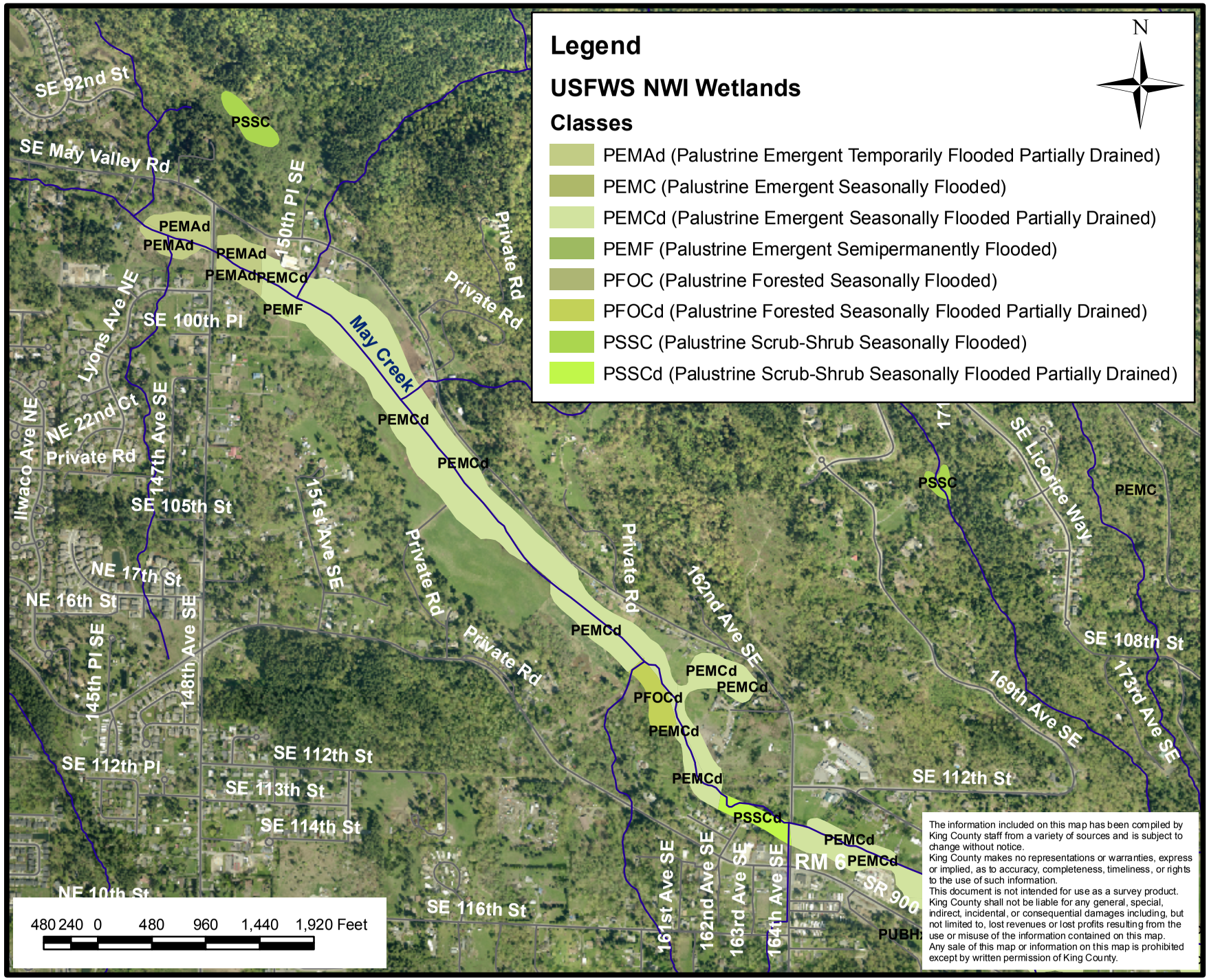
# Figure 3-4: National Wetland Inventory (NWI) Map of May Valley

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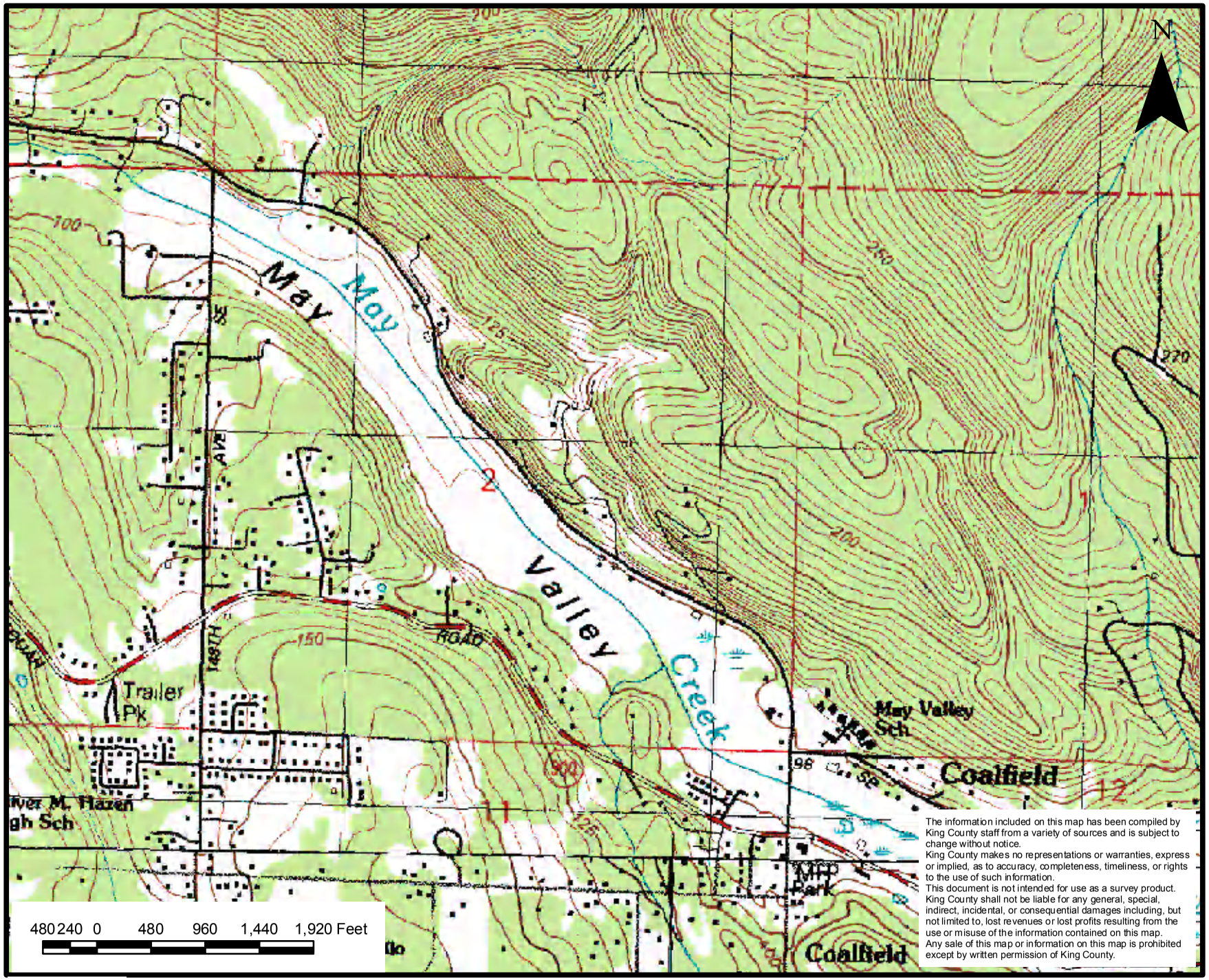
# Figure 3-5: USGS Topographic Map of May Valley (1921)

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# Appendix A – Wetland Rating Form

Wetland name or number _____

# WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): May Creek #5 Date of site visit: 1/28/2010, 2/24/2010 1/21/2010, 1/20/2010

Rated by LM, CC, TM Trained by Ecology? Yes__No___ Date of training_____

SEC: 2, 3 TWNSHP: 23N RNGE: 5E Is S/T/R in Appendix D? Yes___ No X

**Map of wetland unit: Figure 1 Estimated size 140 acres**

## SUMMARY OF RATING

### Category based on FUNCTIONS provided by wetland

**I___ II X III___ IV___**

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

| | |
|---|---|
| Score for Water Quality Functions | 14 |
| Score for Hydrologic Functions | 26 |
| Score for Habitat Functions | 21 |
| **TOTAL score for Functions** | 61 |

### Category based on SPECIAL CHARACTERISTICS of wetland

**I___ II___ Does not Apply X**

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

**Summary of basic information about the wetland unit**

| Wetland Unit has Special Characteristics | | Wetland HGM Class used for Rating | |
|---|---|---|---|
| Estuarine | | Depressional | |
| Natural Heritage Wetland | | Riverine | X |
| Bog | | Lake-fringe | |
| Mature Forest | | Slope | |
| Old Growth Forest | | Flats | |
| Coastal Lagoon | | Freshwater Tidal | |
| Interdunal | | | |
| None of the above | | Check if unit has multiple HGM classes present | |

Wetland name or number _____

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

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

| Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category) | YES | NO |
|---|---|---|
| SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database. | | X |
| SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form). | | X |
| SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?* | | X |
| SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance. | | X |

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

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number _____

# Classification of Wetland Units in Western Washington

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

**1.** Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?

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

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

*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 rated as an* ***Estuarine*** *wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. ).

**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 both** of the following criteria?

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

___At least 30% of the open water area is deeper than 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**?

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

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

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

__X__ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

__X__ The overbank flooding occurs at least once every two years.

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

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

**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 clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

| *HGM Classes within 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 | Depressional |
| Depressional + Lake-fringe | Depressional |
| Salt Water Tidal Fringe and any other class of freshwater wetland | Treat as ESTUARINE under wetlands with special characteristics |

If you are unable still 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 _____

| D | **Depressional and Flats Wetlands**<br>**WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality | **Points**<br>(only 1 score per box) |
|---|---|---|
| D | **D 1. Does the wetland unit have the <u>potential</u> to improve water quality?** | *(see p.38)* |
| D | D 1.1 Characteristics of surface water flows out of the wetland:<br>Unit is a depression with no surface water leaving it (no outlet) points = 3<br>Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2<br>Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1<br>Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1<br>(*If ditch is not permanently flowing treat unit as "intermittently flowing"*)<br>Provide photo or drawing | **Figure** ___ |
| D | S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)*<br>YES points = 4<br>NO points = 0 | |
| D | D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class)<br>Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5<br>Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3<br>Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1<br>Wetland has persistent, ungrazed vegetation <1/10 of area points = 0<br>Map of Cowardin vegetation classes | **Figure** ___ |
| D | D1.4 Characteristics of seasonal ponding or inundation.<br>*This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.*<br>Area seasonally ponded is > ½ total area of wetland points = 4<br>Area seasonally ponded is > ¼ total area of wetland points = 2<br>Area seasonally ponded is < ¼ total area of wetland points = 0<br>Map of Hydroperiods | **Figure** ___ |
| D | **Total for D 1** *Add the points in the boxes above* | |
| D | **D 2. Does the wetland unit have the <u>opportunity</u> to improve water quality?**<br>Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.*<br>— Grazing in the wetland or within 150 ft<br>— Untreated stormwater discharges to wetland<br>— Tilled fields or orchards within 150 ft of wetland<br>— A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging<br>— Residential, urban areas, golf courses are within 150 ft of wetland<br>— Wetland is fed by groundwater high in phosphorus or nitrogen<br>— Other_____<br>**YES** multiplier is **2** **NO** multiplier is **1** | *(see p. 44)*<br>multiplier<br>_____ |
| D | **<u>TOTAL</u> - Water Quality Functions** Multiply the score from D1 by D2<br>***Add score to table on p. 1*** | |

Wetland name or number _____

| D | **Depressional and Flats Wetlands**<br>HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation | **Points**<br>(only 1 score per box) |
|---|---|---|
| | **D 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?** | *(see p.46)* |
| D | D 3.1 Characteristics of surface water flows out of the wetland unit<br>Unit is a depression with no surface water leaving it (no outlet) points = 4<br>Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2<br>Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1<br>*(If ditch is not permanently flowing treat unit as "intermittently flowing")*<br>Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 0 | |
| D | D 3.2 Depth of storage during wet periods<br>*Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).*<br>Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7<br>The wetland is a "headwater" wetland" points = 5<br>Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5<br>Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3<br>Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1<br>Marks of ponding less than 0.5 ft points = 0 | |
| D | D 3.3 Contribution of wetland unit to storage in the watershed<br>*Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.*<br>The area of the basin is less than 10 times the area of unit points = 5<br>The area of the basin is 10 to 100 times the area of the unit points = 3<br>The area of the basin is more than 100 times the area of the unit points = 0<br>Entire unit is in the FLATS class points = 5 | |
| D | **Total for D 3** *Add the points in the boxes above* | |
| D | **D 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?**<br>Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur.<br>*Note which of the following indicators of opportunity apply.*<br>— Wetland is in a headwater of a river or stream that has flooding problems<br>— Wetland drains to a river or stream that has flooding problems<br>— Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems<br>— Other_____<br>**YES** multiplier is **2** **NO** multiplier is **1** | *(see p. 49)*<br>multiplier<br>_____ |
| D | **TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4<br>***Add score to table on p. 1*** | |

Wetland name or number _____

| R | **Riverine and Freshwater Tidal Fringe Wetlands**<br>WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality | **Points**<br>(only 1 score per box) |
|---|---|---|
| R | **R 1. Does the wetland unit have the <u>potential</u> to improve water quality?** | *(see p.52)* |
| R | R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event:<br>Depressions cover >3/4 area of wetland — points = 8<br>Depressions cover > 1/2 area of wetland — points = 4 (wet pasture areas are almost all depressions)<br>If depressions > ½ of area of unit draw polygons on aerial photo or map<br>Depressions present but cover < 1/2 area of wetland — points = 2<br>No depressions present — points = 0 | Figure 1<br>4 |
| R | R 1.2 Characteristics of the vegetation in the unit (areas with >90% cover at person height):<br>Trees or shrubs > 2/3 the area of the unit — points = 8<br>Trees or shrubs > 1/3 area of the unit — points = 6<br>Ungrazed, herbaceous plants > 2/3 area of unit — points = 6<br>Ungrazed herbaceous plants > 1/3 area of unit — points = 3<br>Trees, shrubs, and ungrazed herbaceous < 1/3 area of unit — points = 0<br>Aerial photo or map showing polygons of different vegetation types | Figure 2<br>3 |
| R | *Add the points in the boxes above* | 7 |
| R | **R 2. Does the wetland unit have the <u>opportunity</u> to improve water quality?**<br>Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.*<br>X Grazing in the wetland or within 150ft<br>X Untreated stormwater discharges to wetland<br>— Tilled fields or orchards within 150 feet of wetland<br>X A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging<br>X Residential, urban areas, golf courses are within 150 ft of wetland<br>X The river or stream linked to the wetland has a contributing basin where human activities have raised levels of sediment, toxic compounds or nutrients in the river water above standards for water quality May Creek on 303(d) list for fecal coliform<br>— Other _____<br>YES multiplier is **2** NO multiplier is **1** | *(see p.53)*<br>multiplier<br>2 |
| R | **<u>TOTAL</u> - Water Quality Functions** Multiply the score from R 1 by R 2<br>***Add score to table on p. 1*** | 14 |

**Comments**

Wetland name or number _____

| R | **Riverine and Freshwater Tidal Fringe Wetlands**<br>HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion | **Points** (only 1 score per box) |
|---|---|---|
| | **R 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?** | *(see p.54)* |
| R | R 3.1 Characteristics of the overbank storage the unit provides:<br>*Estimate the average width of the wetland unit perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: ( average width of unit)/( average width of stream between banks).*<br>If the ratio is more than 20 — points = 9<br>If the ratio is between 10 – 20 — points = 6<br>If the ratio is 5 - <10 — points = 4<br>If the ratio is 1 - <5 — points = 2<br>If the ratio is < 1 — points = 1<br>Stream = ~12ft<br>Wetland = ~300ft<br>Aerial photo or map showing average widths | Figure 1<br>9 |
| R | R 3.2 Characteristics of vegetation that slow down water velocities during floods: *Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description.* (polygons need to have >90% cover at person height NOT Cowardin classes):<br>Forest or shrub for >1/3 area OR herbaceous plants > 2/3 area — points = 7<br>Forest or shrub for > 1/10 area OR herbaceous plants > 1/3 area — points = 4<br>Vegetation does not meet above criteria — points = 0<br>Aerial photo or map showing polygons of different vegetation types | Figure ___<br>4 |
| R | *Add the points in the boxes above* | 13 |
| R | **R 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?**<br>Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. *Note which of the following conditions apply.*<br>X There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding.<br>X There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding Chinook spawning near UK Wash.<br>— Other_____<br>*(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike)*<br>YES multiplier is **2** **NO** multiplier is **1** | *(see p.57)*<br>multiplier<br>2 |
| R | **TOTAL - Hydrologic Functions** Multiply the score from R 3 by R 4<br>***Add score to table on p. 1*** | 26 |

**Comments**

Wetland name or number _____

| | | |
|---|---|---|
| L | **Lake-fringe Wetlands**<br>WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality | **Points**<br>(only 1 score per box) |
| L | **L 1. Does the wetland unit have the <u>potential</u> to improve water quality?** | *(see p.59)* |
| L | L 1.1 Average width of vegetation along the lakeshore *(use polygons of Cowardin classes)*:<br>Vegetation is more than 33ft (10m) wide — points = 6<br>Vegetation is more than 16 (5m) wide and <33ft — points = 3<br>Vegetation is more than 6ft (2m) wide and <16 ft — points = 1<br>Vegetation is less than 6 ft wide — points = 0<br>Map of Cowardin classes with widths marked | Figure ___ |
| L | L 1.2 Characteristics of the vegetation in the wetland: *choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. These are not Cowardin classes. Area of Cover is total cover in the unit, but it can be in patches. NOTE: Herbaceous does not include aquatic bed.*<br>Cover of herbaceous plants is >90% of the vegetated area — points = 6<br>Cover of herbaceous plants is >2/3 of the vegetated area — points = 4<br>Cover of herbaceous plants is >1/3 of the vegetated area — points = 3<br>Other vegetation that is not aquatic bed or herbaceous covers > 2/3 unit — points = 3<br>Other vegetation that is not aquatic bed in > 1/3 vegetated area — points = 1<br>Aquatic bed vegetation and open water cover > 2/3 of the unit — points = 0<br>Map with polygons of different vegetation types | Figure ___ |
| L | *Add the points in the boxes above* | |
| L | **L 2. Does the wetland have the <u>opportunity</u> to improve water quality?**<br>Answer YES if you know or believe there are pollutants in the lake water, or polluted surface water flowing through the unit to the lake. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.*<br>— Wetland is along the shores of a lake or reservoir that does not meet water quality standards<br>— Grazing in the wetland or within 150ft<br>— Polluted water discharges to wetland along upland edge<br>— Tilled fields or orchards within 150 feet of wetland<br>— Residential or urban areas are within 150 ft of wetland<br>— Parks with grassy areas that are maintained, ballfields, golf courses (all within 150 ft. of lake shore)<br>— Power boats with gasoline or diesel engines use the lake<br>— Other_____<br>**YES** multiplier is **2** **NO** multiplier is **1** | *(see p.61)*<br>multiplier<br>_____ |
| L | **<u>TOTAL</u> - Water Quality Functions** Multiply the score from L1 by L2<br>***Add score to table on p. 1*** | |

**Comments**

Wetland name or number _____

| | | |
|---|---|---|
| **L** | **Lake-fringe Wetlands**<br>HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce shoreline erosion | **Points**<br>(only 1 score per box) |
| **L** | **L 3. Does the wetland unit have the <u>potential</u> to reduce shoreline erosion?** | *(see p.62)* |
| **L** | L 3 Distance along shore and average width of Cowardin classes along the lakeshore (**do not** include aquatic bed): *(choose the highest scoring description that matches conditions in the wetland)*<br>> ¾ of distance is shrubs or forest at least 33 ft (10m) wide — points = 6<br>> ¾ of distance is shrubs or forest at least 6 ft. (2 m) wide — points = 4<br>> ¼ distance is shrubs or forest at least 33 ft (10m) wide — points = 4<br>Vegetation is at least 6 ft (2m) wide (any type except aquatic bed) — points = 2<br>Vegetation is less than 6 ft (2m) wide (any type except aquatic bed) — points = 0<br>Aerial photo or map with Cowardin vegetation classes | **Figure ___** |
| **L** | *Record the points from the box above* | |
| **L** | **L 4. Does the wetland unit have the <u>opportunity</u> to reduce erosion?**<br>Are there features along the shore that will be impacted if the shoreline erodes? *Note which of the following conditions apply.*<br>— There are human structures and activities along the upland edge of the wetland (buildings, fields) that can be damaged by erosion.<br>— There are undisturbed natural resources along the upland edge of the wetland (e.g. mature forests other wetlands) than can be damaged by shoreline erosion<br>— Other_____<br>**YES** multiplier is **2** **NO** multiplier is **1** | *(see p.63)*<br>multiplier |
| **L** | **TOTAL - Hydrologic Functions** Multiply the score from L 3 by L 4<br>***Add score to table on p. 1*** | |

**Comments**

Wetland name or number _____

| S | **Slope Wetlands**<br>WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality | **Points**<br>(only 1 score per box) |
|---|---|---|
| S | **S 1. Does the wetland unit have the <u>potential</u> to improve water quality?** | ***(see p.64)*** |
| S | S 1.1 Characteristics of average slope of unit:<br>Slope is1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)* points = 3<br>Slope is 1% - 2% points = 2<br>Slope is 2% - 5% points = 1<br>Slope is greater than 5% points = 0 | |
| S | S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)*<br>YES = 3 points NO = 0 points | |
| S | S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants:<br>*Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.*<br>Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6<br>Dense, uncut, herbaceous vegetation > 1/2 of area points = 3<br>Dense, woody, vegetation > ½ of area points = 2<br>Dense, uncut, herbaceous vegetation > 1/4 of area points = 1<br>Does not meet any of the criteria above for vegetation points = 0<br>Aerial photo or map with vegetation polygons | **Figure ___** |
| S | **Total for S 1** *Add the points in the boxes above* | |
| S | **S 2. Does the wetland unit have the <u>opportunity</u> to improve water quality?**<br>Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.*<br>— Grazing in the wetland or within 150ft<br>— Untreated stormwater discharges to wetland<br>— Tilled fields, logging, or orchards within 150 feet of wetland<br>— Residential, urban areas, or golf courses are within 150 ft upslope of wetland<br>— Other_____<br>**YES** multiplier is **2** **NO** multiplier is **1** | ***(see p.67)***<br>multiplier<br>_____ |
| S | **TOTAL - Water Quality Functions** Multiply the score from S1 by S2<br>***Add score to table on p. 1*** | |

**Comments**

Wetland name or number _____

| S | **Slope Wetlands**<br>HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream erosion | **Points**<br>(only 1 score per box) |
|---|---|---|
| | **S 3. Does the wetland unit have the <u>potential</u> to reduce flooding and stream erosion?** | *(see p.68)* |
| S | S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms.<br>*Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)*<br>Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland. points = 6<br>Dense, uncut, **rigid** vegetation > 1/2 area of wetland points = 3<br>Dense, uncut, **rigid** vegetation > 1/4 area points = 1<br>More than 1/4 of area is grazed, mowed, tilled or vegetation is not rigid points = 0 | |
| S | S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows:<br>The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2<br>NO points = 0 | |
| S | *Add the points in the boxes above* | |
| S | **S 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?**<br>Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.*<br>— Wetland has surface runoff that drains to a river or stream that has flooding problems<br>— Other_____<br>*(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)*<br>**YES** multiplier is **2** **NO** multiplier is **1** | *(see p. 70)*<br>multiplier<br>_____ |
| S | **TOTAL - Hydrologic Functions** Multiply the score from S 3 by S 4<br>***Add score to table on p. 1*** | |

**Comments**

Wetland name or number _____

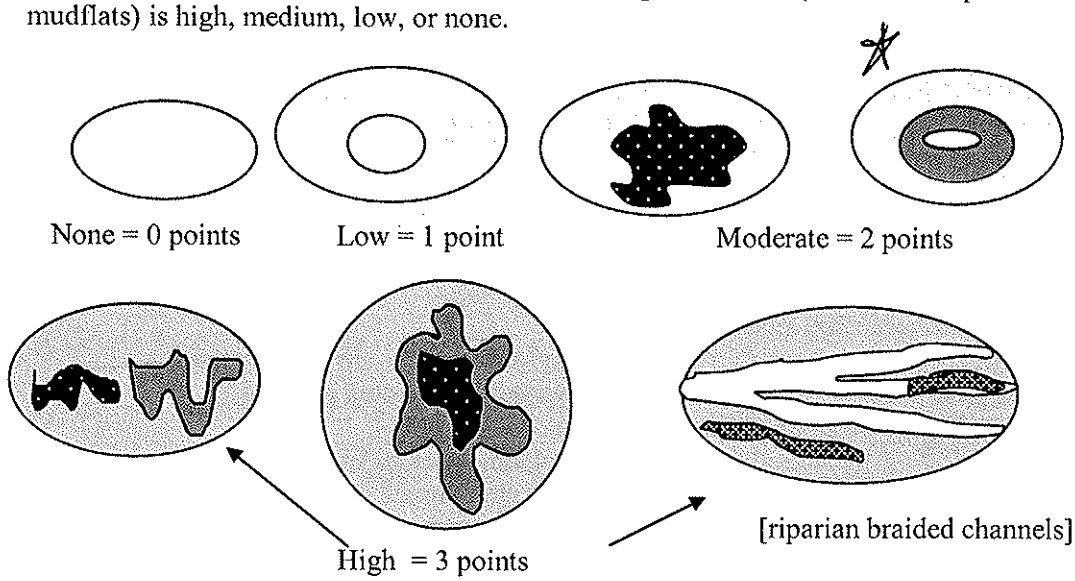
| ***These questions apply to wetlands of all HGM classes.*** HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat | **Points** (only 1 score per box) |
|---|---|
| **H 1. Does the wetland unit have the potential to provide habitat for many species?** | |
| H 1.1 Vegetation structure ***(see p. 72)***<br>*Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.*<br>____Aquatic bed<br>__✓__Emergent plants<br>__✓__Scrub/shrub (areas where shrubs have >30% cover)<br>__✓__Forested (areas where trees have >30% cover)<br>*If the unit has a forested class check if:*<br>____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<br>*Add the number of vegetation structures that qualify. If you have:*<br>4 structures or more — points = 4<br>3 structures — points = 2<br>2 structures — points = 1<br>1 structure — points = 0<br>Map of Cowardin vegetation classes | **Figure** 2<br><br>2 |
| H 1.2. Hydroperiods ***(see p. 73)***<br>*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 acre to count. (see text for descriptions of hydroperiods)*<br>____Permanently flooded or inundated — 4 or more types present — points = 3<br>__X__Seasonally flooded or inundated — 3 types present — points = 2<br>__X__Occasionally flooded or inundated — 2 types present — point = 1<br>__X__Saturated only — 1 type present — points = 0<br>__X__ Permanently flowing stream or river in, or adjacent to, the wetland<br>____ Seasonally flowing stream in, or adjacent to, the wetland<br>____ ***Lake-fringe wetland* = 2 points**<br>____***Freshwater tidal wetland* = 2 points**<br>Map of hydroperiods | **Figure** 1<br><br>3 |
| H 1.3. Richness of Plant Species ***(see p. 75)***<br>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)*<br>*You do not have to name the species.*<br>*Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle*<br>If you counted: > 19 species — points = 2<br>5 - 19 species — points = 1<br>< 5 species — points = 0<br>*List species below if you want to:*<br>Cherry Trees, Scouns willow, Sitka willow, creeping buttercup, douglas spirea, Pea-fruit rose, Indian Plum, Pacific willow, red alder, him. Blackberry, moss, pasture grasses, oregon ash, red oiser dogwood, Sitka spruce, pacific ninebark, giant horsetail, Soft rush, Slough sedge, hawthorn, douglas fir | 2 |

Total for page 7

Wetland name or number _____

H 1.4. Interspersion of habitats *(see p. 76)* — Figure 1

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.




NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

2

H 1.5. Special Habitat Features: *(see p. 77)*

*Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.*

X Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

X Standing snags (diameter at the bottom > 4 inches) in the wetland

X Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

____ At least ¼ acre of thin-stemmed persistent vegetation 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 each stratum of plants

*NOTE: The 20% stated in early printings of the manual on page 78 is an error.*

3

**H 1. TOTAL** Score - potential for providing habitat
*Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*

12

**Comments**

Wetland name or number _____

| H 2. Does the wetland unit have the opportunity to provide habitat for many species? | |
|---|---|
| H 2.1 Buffers *(see p. 80)*<br>*Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."*<br>— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5**<br>— 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4**<br>— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4**<br>— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3**<br>— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3**<br>**If buffer does not meet any of the criteria above**<br>— No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**<br>X No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**<br>— Heavy grazing in buffer. **Points = 1**<br>— Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.**<br>— Buffer does not meet any of the criteria above. **Points = 1**<br>Aerial photo showing buffers | Figure 1<br><br>2 |
| H 2.2 Corridors and Connections *(see p. 81)*<br>H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*).<br>YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2<br>H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above?<br>YES = **2 points** (*go to H 2.3*) NO = H 2.2.3<br>H 2.2.3 Is the wetland:<br>within 5 mi (8km) of a brackish or salt water estuary OR<br>within 3 mi of a large field or pasture (>40 acres) OR<br>within 1 mi of a lake greater than 20 acres?<br>YES = **1 point** NO = **0 points** | 1 |

Total for page 3

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm )***

Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.*

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

____**Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).

____**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 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 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.

____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*).

_X_**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*).

_X_**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: pp. 167-169 and glossary in Appendix A).*

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

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

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

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

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** No habitats = 0 points

*Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)*

3

Wetland name or number _____

| | |
|---|---|
| H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)***<br>There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5<br>The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5<br>There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3<br>The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3<br>There is at least 1 wetland within ½ mile. points = 2<br>There are no wetlands within ½ mile. points = 0 | 3 |
| **H 2.** TOTAL Score - opportunity for providing habitat<br>*Add the scores from H2.1,H2.2, H2.3, H2.4* | 9 |
| TOTAL for H 1 from page 14 | 12 |
| **Total Score for Habitat Functions** – add the points for H 1, H 2 and record the result on p. 1 | 21 |

Wetland name or number _____

## CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

***Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.***

| **Wetland Type**<br>*Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.* | **Category** |
|---|---|
| **SC 1.0 Estuarine wetlands** ***(see p. 86)***<br>Does the wetland unit meet the following criteria for Estuarine wetlands?<br>— The dominant water regime is tidal,<br>— Vegetated, and<br>— With a salinity greater than 0.5 ppt.<br>YES = Go to SC 1.1 NO X | |
| SC 1.1 Is the wetland unit 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?<br>YES = Category I (NO) go to SC 1.2 | **Cat. I** |
| SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II<br>— The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre.<br>— 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.<br>— The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. | **Cat. I**<br>**Cat. II**<br>**Dual rating I/II** |
| | |

| | |
|---|---|
| **SC 2.0 Natural Heritage Wetlands** ***(see p. 87)***<br>Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.<br>SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)*<br>S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site 2/2/2010<br>Closest is T23N R5E S25<br>YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO X<br><br>SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species?<br>YES = Category I NO X not a Heritage Wetland | **Cat. I** |
| **SC 3.0 Bogs** ***(see p. 87)***<br>Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.***<br>1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No - go to Q. 2<br>2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond?<br>Yes - go to Q. 3 No - Is not a bog for purpose of rating<br>3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)?<br>Yes – Is a bog for purpose of rating No - go to Q. 4<br>NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.<br>*1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?*<br>2. YES = Category I No X Is not a bog for purpose of rating | **Cat. I** |

| | |
|---|---|
| **SC 4.0 Forested Wetlands** ***(see p. 90)***<br>Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the 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.*<br>— **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/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more.<br>NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.<br>— **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.<br>YES = Category I NO X not a forested wetland with special characteristics | **Cat. I** |
| **SC 5.0 Wetlands in Coastal Lagoons** ***(see p. 91)***<br>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?<br>— 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<br>— The lagoon in which the wetland is located contains surface 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)*<br>YES = Go to SC 5.1 NO X not a wetland in a coastal lagoon<br><br>SC 5.1 Does the wetland meets all of the following three conditions?<br>— The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74).<br>— 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.<br>— The wetland is larger than 1/10 acre (4350 square feet)<br>YES = Category I NO = Category II | **Cat. I**<br><br>**Cat. II** |

| | |
|---|---|
| **SC 6.0 Interdunal Wetlands** *(see p. 93)*<br>Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?<br>YES - go to SC 6.1 NO X not an interdunal wetland for rating<br>***If you answer yes you will still need to rate the wetland based on its functions.***<br>In practical terms that means the following geographic areas:<br>• Long Beach Peninsula- lands west of SR 103<br>• Grayland-Westport- lands west of SR 105<br>• Ocean Shores-Copalis- lands west of SR 115 and SR 109<br>SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger?<br>YES = Category II NO – go to SC 6.2<br>SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?<br>YES = Category III | **Cat. II**<br><br>**Cat. III** |
| **Category of wetland based on Special Characteristics**<br>*Choose the "highest" rating if wetland falls into several categories, and record on p. 1.*<br>If you answered NO for all types enter "Not Applicable" on p.1 | N/A |

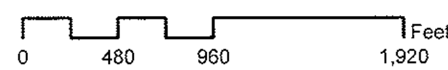
# May Creek Valley Wetland 2009 Aerial

Figure 1

**Legend**

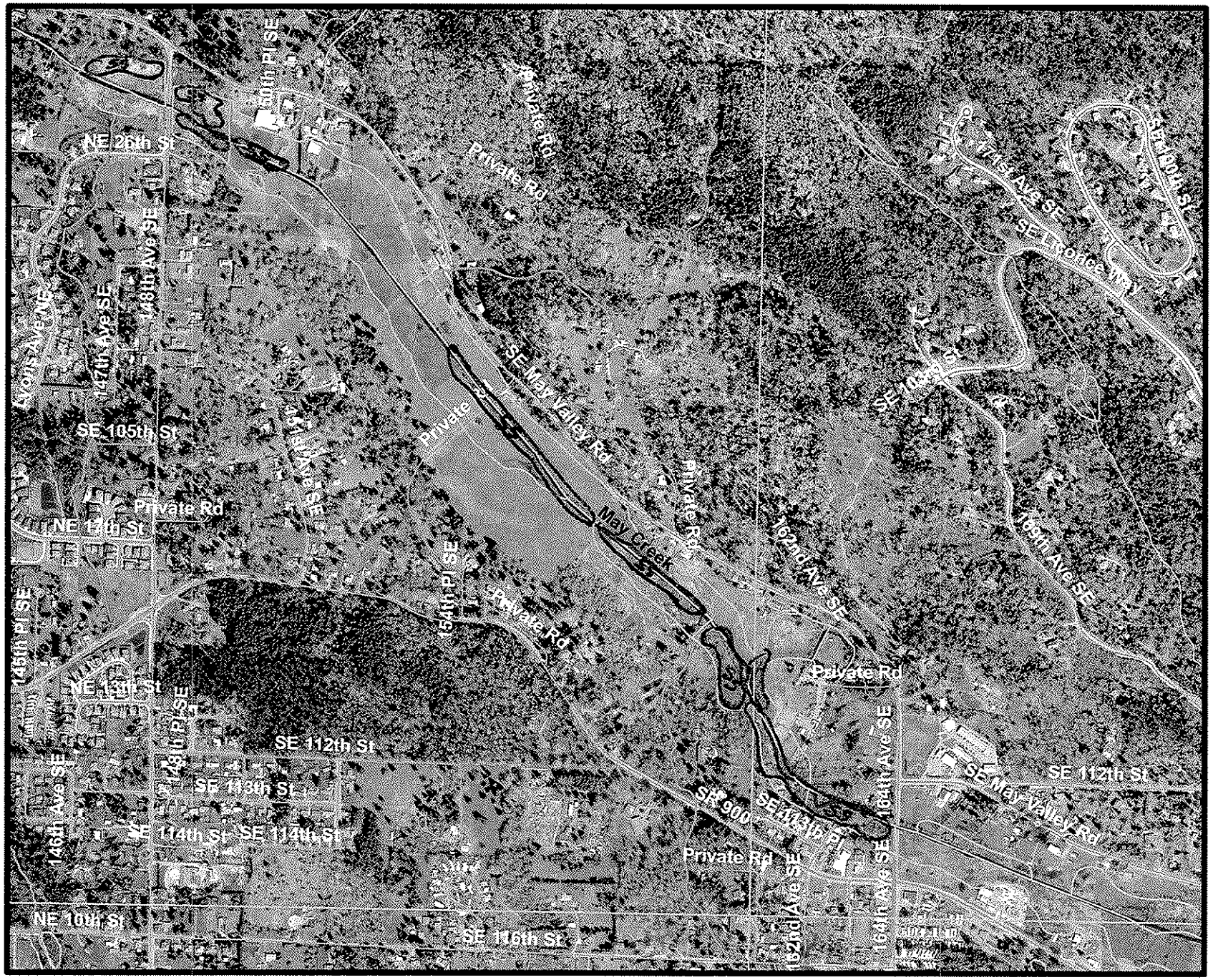
U S Fish and Wildlife Service: Conus national wetlands inventory - polygons

Black outline
Depressions



# May Creek Valley Wetland 2009 Aerial

Figure 2




N
W E
S

**Legend**

U S Fish and Wildlife Service: Conus national wetlands inventory - polygons

Black Outline
SS: Scrub-Shrub

0 480 960 1,920 Feet

# Appendix B – Wetland Delineation Data Forms

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

| | | | | | |
|---|---|---|---|---|---|
| Project Site: | May Creek Valley - DNRP | City/County: | King | Sampling Date: | 1-21-2010 |
| Applicant/Owner: | King County DNRP | State: | WA | Sampling Point: | Soil Pit #1 |
| Investigator(s): | Miller, Martin, Clark | Section, Township, Range: | S2, T23N, R5E | | |
| Landform (hillslope, terrace, etc.): | Valley | Local relief (concave, convex, none): | flat | Slope (%): | 0.5 |
| Subregion (LRR): | Lat: 47.51495 | Long: -122.14239 | Datum: | | |
| Soil Map Unit Name: | RdC, Bh | NWI classification: | PEM/PSS | | |

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, 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 Soil Present? | Yes | ☒ | No | ☐ | **Is the Sampling Area within a Wetland?** | **Yes** | ☒ | **No** ☐ |
| Wetland Hydrology Present? | Yes | ☒ | No | ☐ | | | | |

Remarks: **SP #1 south of creek just west of barbed wire fence (probably 1st property east of 148th) – about 30-35 feet south of creek.**

## VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: **10m**) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Prunus spp.* | 30 | Y | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | **30** | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot Size: **10m**) | | | |
| 5. *Oemleria cerasiformis* | 5 | N | FACU |
| 6. *Salix sitchensis* | 30 | Y | FACW |
| 7. *Salix scouleriana* | 30 | Y | FAC |
| 8. | | | |
| 9. | | | |
| | **65** | = Total Cover | |
| **Herb Stratum** (Plot Size: **5m**) | | | |
| 10. ***Phalaris arundinacea*** | 30 | Y | FACW |
| 11. **Unknown grass** | 5 | N | ? |
| 12. **Unknown grass** | Trace | N | ? |
| 13. | | | |
| 14. | | | |
| 15. | | | |
| 16. | | | |
| 17. | | | |
| 18. | | | |
| 19. | | | |
| 20. | | | |
| | **35** | = Total Cover | |
| **Woody Vine Stratum** (Plot Size: ) | | | |
| 1. ***Rubus procerus*** | Trace | N | FACU |
| 2. | | | |
| | **130** | = Total Cover | |

% Bare Ground in Herb Stratum **65**

**Dominance Test Worksheet:**

| | | |
|---|---|---|
| Number of Dominant Species That Are OBL, FACW, or FAC: | **3** | (A) |
| Total Number of Dominant Species Across All Strata: | **4** | (B) |
| Percent of Dominant Species That Are OBL, FACW, or FAC: | **75** | (A/B) |

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species | x1 = |
| FACW species | x2 = |
| FAC species | x3 = |
| FACU species | x4 = |
| UPL species | x5 = |
| Column Totals: (A) | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

**X** Dominance Test is >50%

Prevalence Index is ≤3.0[1]

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: Starting to see buds. This is a forested/scrub-shrub portion of the wetland along the stream.

Project Site: May Creek Valley - DNRP

## SOIL

Sampling Point: #1

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (Moist) | % | Type[1] | Loc[2] | Texture | Remarks |
| 0-18" | 10YR 2/1 | 100 | Too small color | 1 | C | M | 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.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:**

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

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

**Restrictive Layer (if present):**

Type:

Depth (Inches):

**Hydric Soils Present?** **Yes** ☒ **No** ☐

Remarks: Very uniform matrix, all one horizon within 18 inches. Contains live roots.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface Water Present? | Yes | ☐ | No | ☒ | Depth (inches): | |
| Water Table Present? | Yes | ☒ | No | ☐ | Depth (inches): | 8 inches |
| Saturation Present? (includes capillary fringe) | Yes | ☒ | No | ☐ | Depth (inches): | 0 inches |

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

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

Remarks: About 35 feet from stream in an area with less reed canarygrass. Some standing water present within about 10 feet. Assuming hydrology would also be present later in the growing season.

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

| | | | | | |
|---|---|---|---|---|---|
| Project Site: | May Creek Valley - DNRP | City/County: | King | Sampling Date: | 1-21-2010 |
| Applicant/Owner: | King County DNRP | State: | WA | Sampling Point: | Soil Pit #2 |
| Investigator(s): | Miller, Martin, Clark | Section, Township, Range: | S2, T23N, R5E | | |
| Landform (hillslope, terrace, etc.): | Valley | Local relief (concave, convex, none): | flat | Slope (%): | 0.5 |
| Subregion (LRR): | Lat: 47.51495 | Long: | -122.14239 | Datum: | |
| Soil Map Unit Name: | RdC, Bh | NWI classification: | PEM/PSS | | |

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, 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 Soil Present? | Yes | ☐ | No | ☒ | **Is the Sampling Area within a Wetland?** | **Yes** | ☐ | **No** ☒ |
| Wetland Hydrology Present? | Yes | ☐ | No | ☒ | | | | |

Remarks: **Too many grasses were present that we could not identify given the time of year for us to feel confident about the vegetation analysis; however, we are comfortable in saying this sample area is not within a wetland because the hydric soil and hydrology are not present.**

## VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: **10m** ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. **None** | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | **0** | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot Size: **10m** ) | | | |
| 5. ***Cytisus scoparius* (scotch broom)** | Trace | N | ? |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| | **0** | = Total Cover | |
| **Herb Stratum** (Plot Size: **5 m**) | | | |
| 10. **Thistle species** | Trace | N | ? |
| 11. ***Festuca arundinacea*** | 42 | Y | FAC |
| 12. ***Datctylis glomerata*** | 42 | Y | FACU |
| 13. *Phalaris arundinacea* | 15 | N | FACW |
| 14. **Unknown grasses** | | | |
| 15. | | | |
| 16. | | | |
| 17. | | | |
| 18. | | | |
| 19. | | | |
| 20. | | | |
| | **99** | = Total Cover | |
| **Woody Vine Stratum** (Plot Size: **10m** ) | | | |
| 1. ***Rubus procerus*** | Trace | N | FACU |
| 2. | | | |
| | **99** | = Total Cover | |

% Bare Ground in Herb Stratum **0%**

**Dominance Test Worksheet:**

| | | |
|---|---|---|
| Number of Dominant Species That Are OBL, FACW, or FAC: | **1** | (A) |
| Total Number of Dominant Species Across All Strata: | **2** | (B) |
| Percent of Dominant Species That Are OBL, FACW, or FAC: | **50** | (A/B) |

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | **0** | x1 = | **0** |
| FACW species | **15** | x2 = | **30** |
| FAC species | **42** | x3 = | **126** |
| FACU species | **42** | x4 = | **168** |
| UPL species | **0** | x5 = | **0** |
| Column Totals: | **99** (A) | | **324** (B) |

Prevalence Index = B/A = **3.2**

**Hydrophytic Vegetation Indicators:**

**No** Dominance Test is >50%

**No** Prevalence Index is $\leq 3.0^1$

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:

Project Site: May Creek Valley - DNRP

## SOIL

Sampling Point: #2

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (Moist) | % | Type[1] | Loc[2] | Texture | Remarks |
| 0-8” | 7.5YR 2.5/3 | 100 | 2.5YR 5/8 | 1 | C | M | Sandy loam | |
| 8-18” | 10YR ¾ | 100 | | | | | Loamy sand | Contains large gravels |

[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.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:**

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

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

**Restrictive Layer (if present):**

Type:

Depth (Inches):

**Hydric Soils Present?** **Yes** ☐ **No** ☒

Remarks: This soil is dry as a bone and very bright.
About 10 feet north of this soil pit (towards the wetland), another hole has a grayish transition (Gley1 5/10Y) at 10-11 inches at approximate boundary between reed canarygrass and blackberry. About 5 feet north of this soil pit the color is 2.5Y 5/2 in bottom of the pit.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

| | | | | | |
|---|---|---|---|---|---|
| Surface Water Present? | Yes | ☐ | No | ☒ | Depth (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: No groundwater within 18 inches of surface.

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

| | | | | | |
|---|---|---|---|---|---|
| Project Site: | May Creek Valley - DNRP | City/County: | King | Sampling Date: | 1-26-2010 |
| Applicant/Owner: | King County DNRP | State: | WA | Sampling Point: | Soil Pit #3 |
| Investigator(s): | Martin, Clark | Section, Township, Range: | S2, T23N, R5E | | |
| Landform (hillslope, terrace, etc.): | Valley | Local relief (concave, convex, none): | flat | Slope (%): | 0.5 |
| Subregion (LRR): | Lat: 47.51495 | Long: | -122.14239 | Datum: | |
| Soil Map Unit Name: | RdC, Bh | NWI classification: | PEM/PSS | | |

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☒, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, 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 Soil Present? | Yes | ☒ | No | ☐ | **Is the Sampling Area within a Wetland?** | **Yes** | ☒ | **No** ☐ |
| Wetland Hydrology Present? | Yes | ☒ | No | ☐ | | | | |

Remarks: **Soil Pit #3 is located on Colasurdo property, just east of the tributary along the access road. Chose this location because there are horses south of the fence. The vegetation in this area is mowed and grazed.**

## VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: **10m** ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. **None** | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | **0** | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot Size: **10m** ) | | | |
| 5. **None** | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| | **0** | = Total Cover | |
| **Herb Stratum** (Plot Size: **5m** ) | | | |
| 10. ***Juncus effusus*** | 51 | Y | FACW |
| 11. **Unknown pasture grasses** | 42 | Y | ? |
| 12. ***Ranunculus repens*** | Trace | N | FACW |
| 13. **Moss species** | 5 | N | ? |
| 14. | | | |
| 15. | | | |
| 16. | | | |
| 17. | | | |
| 18. | | | |
| 19. | | | |
| 20. | | | |
| | **98** | = Total Cover | |
| **Woody Vine Stratum** (Plot Size: ) | | | |
| 1. ***Rubus procerus*** | Trace | N | FACU |
| 2. | | | |
| | **98** | = Total Cover | |
| % Bare Ground in Herb Stratum | | | |

**Dominance Test Worksheet:**

| | | |
|---|---|---|
| Number of Dominant Species That Are OBL, FACW, or FAC: | **?** | (A) |
| Total Number of Dominant Species Across All Strata: | **2** | (B) |
| Percent of Dominant Species That Are OBL, FACW, or FAC: | **?** | (A/B) |

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x1 = | |
| FACW species | **?** | x2 = | **?** |
| FAC species | | x3 = | |
| FACU species | | x4 = | |
| UPL species | | x5 = | |
| Column Totals: | (A) | | (B) |

Prevalence Index = B/A ?

**Hydrophytic Vegetation Indicators:**

| | |
|---|---|
| **?** | Dominance Test is >50% |
| **?** | Prevalence Index is $\leq 3.0^1$ |
| | Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet) |
| | Wetland Non-Vascular Plants[1] |
| Yes | 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: **Vegetation may be marginal, but it is difficult to determine because the area is highly disturbed with previous horse use. Some of the dominant grass types cannot be determined due to the season and mowing. Based on the large amount of *juncus effusus*, and the obvious indicators of hydrology and hydric soil we are assuming that the vegetation would be hydric if given an opportunity to naturally grow.**

Project Site: May Creek Valley - DNRP

## SOIL

Sampling Point: #3

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (Moist) | % | Type[1] | Loc[2] | Texture | Remarks |
| 0-6.5” | 5YR 2.5/1 | 100 | | | | | Loamy sand | Saturated to the surface |
| 6.5-11.5” | 10YR 5/4 | 90 | 10YR 4/6 | 10 | C | M | Silty loam | |
| 11.5-16” | 10YR 4/6 | 100 | | | | | Silty 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.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:**

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

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

**Restrictive Layer (if present):**

Type:

Depth (Inches):

**Hydric Soils Present?** **Yes** ☒ **No** ☐

Remarks: At line between A/B horizons, contained charcoal-like organic material. <1 cm band of mottles between A/B horizons.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface Water Present? | Yes | ☐ | No | ☒ | Depth (inches): | |
| Water Table Present? | Yes | ☒ | No | ☐ | Depth (inches): | 5.5” |
| Saturation Present? (includes capillary fringe) | Yes | ☒ | No | ☐ | Depth (inches): | surface |

**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: | May Creek Valley - DNRP | City/County: | King | Sampling Date: | 1-26-2010 |
| Applicant/Owner: | King County DNRP | State: | WA | Sampling Point: | Soil Pit #4 |
| Investigator(s): | Martin, Clark | Section, Township, Range: | S2, T23N, R5E | | |
| Landform (hillslope, terrace, etc.): | Valley | Local relief (concave, convex, none): | flat | Slope (%): | 0.5 |
| Subregion (LRR): | Lat: 47.51495 | Long: | -122.14239 | Datum: | |
| Soil Map Unit Name: | RdC, Bh | NWI classification: | PEM/PSS | | |

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, 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 Soil Present? | Yes | ☒ | No | ☐ | **Is the Sampling Area within a Wetland?** | **Yes** | ☒ | **No** ☐ |
| Wetland Hydrology Present? | Yes | ☒ | No | ☐ | | | | |

Remarks: **Soil Pit #4 is located just southeast of SE May Valley Rd/148th Avenue SE intersection. Pit dug at the northern extent of the *Spirea* near 148th.**

## VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: **10m** ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. *Fraxinus latifolia* | **60** | **Y** | **FACW** |
| 2. Fruit tree | 5 | N | ? |
| 3. | | | |
| 4. | | | |
| | **65** | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot Size: **10 m**) | | | |
| 5. ***Spirea douglasii*** | 15 | N | FACW |
| 6. ***Rosa pisocarpa*** | 20 | Y | FAC |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| | **35** | = Total Cover | |
| **Herb Stratum** (Plot Size: **5m** ) | | | |
| 10. ***Phalaris arundinacea*** | 100 | Y | FACW |
| 11. | | | |
| 12. | | | |
| 13. | | | |
| 14. | | | |
| 15. | | | |
| 16. | | | |
| 17. | | | |
| 18. | | | |
| 19. | | | |
| 20. | | | |
| | **100** | = Total Cover | |
| **Woody Vine Stratum** (Plot Size: ) | | | |
| 1. | | | |
| 2. | | | |
| | **200** | = Total Cover | |

% Bare Ground in Herb Stratum **0**

**Dominance Test Worksheet:**

| | | |
|---|---|---|
| Number of Dominant Species That Are OBL, FACW, or FAC: | **3** | (A) |
| Total Number of Dominant Species Across All Strata: | **3** | (B) |
| Percent of Dominant Species That Are OBL, FACW, or FAC: | **100%** | (A/B) |

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species | x1 = |
| FACW species | x2 = |
| FAC species | x3 = |
| FACU species | x4 = |
| UPL species | x5 = |
| Column Totals: (A) | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

**Yes** Dominance Test is >50%

Prevalence Index is $\leq 3.0^1$

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:

Project Site: May Creek Valley - DNRP

## SOIL

Sampling Point: #4

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (Moist) | % | Type[1] | Loc[2] | Texture | Remarks |
| 0 - 8.5” | 10YR 2/1 | 100 | | | | | Clay | Oxidized roots |
| 8.5 – 13.5” | 2.5Y 2.5/1 | 50 | 10YR 5/6 | 50 | | | Clay | Bottom 1/3 of layer has mottles |
| 13.5 – 18 | 10YR 2/1 | | | | | | Clay | Organic pieces, oxidized roots |

[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.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:**

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

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

**Restrictive Layer (if present):**

Type:

Depth (Inches):

**Hydric Soils Present?** **Yes** ☐ **No** ☐

Remarks: The soil in the third layer is actually darker than the color noted, but there was not a good match in the Munsell.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface Water Present? | Yes | ☐ | No | ☒ | Depth (inches): | |
| Water Table Present? | Yes | ☒ | No | ☐ | Depth (inches): | 4.5” |
| Saturation Present? (includes capillary fringe) | Yes | ☒ | No | ☐ | Depth (inches): | surface |

**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: | May Creek Valley - DNRP | City/County: | King | Sampling Date: | 1-28-2010 |
| Applicant/Owner: | King County DNRP | State: | WA | Sampling Point: | Soil Pit #5 |
| Investigator(s): | Miller, Clark | Section, Township, Range: | S2, T23N, R5E | | |
| Landform (hillslope, terrace, etc.): | Valley | Local relief (concave, convex, none): | flat | Slope (%): | 0.5 |
| Subregion (LRR): | Lat: 47.51495 | Long: | -122.14239 | Datum: | |
| Soil Map Unit Name: | RdC, Bh | NWI classification: | PEM/PSS | | |

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, 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 Soil Present? | Yes | ☐ | No | ☒ | **Is the Sampling Area within a Wetland?** | **Yes** | ☐ | **No** ☒ |
| Wetland Hydrology Present? | Yes | ☐ | No | ☒ | | | | |

Remarks: **Soil Pit #5 is located slightly east and just upslope of Soil Pit #4 (SE of May Valley Rd/148th Ave SE intersection). Selected spot within the change from reed canarygrass to blackberry.**

## VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: **10m**) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. ***Acer sp.**** | **25** | **Y** | **FACU** |
| 2. ***Prunus sp.**** | 15 | Y | FACU |
| 3. | | | |
| 4. | | | |
| | **40** | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot Size: **10m**) | | | |
| 5. ***Oemlaria cerasiformis*** | 20 | Y | FACU |
| 6. ***Corylus cornuta**** | 33 | Y | FACU |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| | **53** | = Total Cover | |
| **Herb Stratum** (Plot Size: **5m**) | | | |
| 10. ***Polystichum munitum*** | 20 | Y | FACU |
| 11. ***Pteridium aquilinum*** | 20 | Y | FACU |
| 12. ***Phalaris arundinacea*** | 20 | Y | FACW |
| 13. | | | |
| 14. | | | |
| 15. | | | |
| 16. | | | |
| 17. | | | |
| 18. | | | |
| 19. | | | |
| 20. | | | |
| | **60** | = Total Cover | |
| **Woody Vine Stratum** (Plot Size: ) | | | |
| 1. ***Rubus procerus*** | 45 | Y | FACU |
| 2. | | | |
| | **198** | = Total Cover | |
| % 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: | **9** | (B) |
| Percent of Dominant Species That Are OBL, FACW, or FAC: | **10** | (A/B) |

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | **0** | x1 = | **0** |
| FACW species | **20** | x2 = | **40** |
| FAC species | **0** | x3 = | **0** |
| FACU species | **178** | x4 = | **712** |
| UPL species | **0** | x5 = | **0** |
| Column Totals: | **198** (A) | | **752** (B) |

Prevalence Index = B/A = **3.8**

**Hydrophytic Vegetation Indicators:**

| | |
|---|---|
| **No** | Dominance Test is >50% |
| **No** | Prevalence Index is ≤3.0[1] |
| **No** | Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet) |
| **No** | Wetland Non-Vascular Plants[1] |
| No | 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: ***Vegetation was hard to identify. The cherry tree appears to be ornamental – it is next to an ornamental cedar and the maple appears to be a sugar maple and not a native maple, but it is hard to tell this time of year.**

Project Site: May Creek Valley - DNRP

## SOIL

Sampling Point: #5

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (Moist) | % | Type[1] | Loc[2] | Texture | Remarks |
| 0 – 18" | 7.5YR 3/3 | 100 | 5YR 5/8 | 5 | | | Clay | Small mottles throughout |

[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.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:**

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

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

**Restrictive Layer (if present):**

Type:

Depth (Inches):

**Hydric Soils Present?** **Yes** ☐ **No** ☒

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

| | | | | | |
|---|---|---|---|---|---|
| Surface Water Present? | Yes | ☐ | No | ☒ | Depth (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: No indicators of hydrology are present here.

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

| | | | | | |
|---|---|---|---|---|---|
| Project Site: | May Creek Valley - DNRP | City/County: | King | Sampling Date: | 2-24-2010 |
| Applicant/Owner: | King County DNRP | State: | WA | Sampling Point: | Soil Pit #6 |
| Investigator(s): | Miller, Clark | Section, Township, Range: | S2, T23N, R5E | | |
| Landform (hillslope, terrace, etc.): | Valley | Local relief (concave, convex, none): | flat | Slope (%): | 0.5 |
| Subregion (LRR): | Lat: 47.51495 | Long: | -122.14239 | Datum: | |
| Soil Map Unit Name: | RdC, Bh | NWI classification: | PEM/PSS | | |

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, 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 Soil Present? | Yes | ☒ | No | ☐ | **Is the Sampling Area within a Wetland?** | **Yes** | ☒ | **No** ☐ |
| Wetland Hydrology Present? | Yes | ☒ | No | ☐ | | | | |

Remarks:

## VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: **10m**) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. ***Thuja plicata*** | **20** | **Y** | **FAC** |
| 2. ***Pseudotsuga menziesii*** | 30 | Y | FACU* |
| 3. ***Alnus rubra*** | 35 | Y | FAC |
| 4. ***Fraxinus latifolia*** | 5 | N | FACW |
| 5. *Prunus spp.* | 5 | N | FACU |
| | **95** | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot Size: **10m**) | | | |
| 5. ***Oemleria cerasiformis*** | 5 | N | FACU |
| 6. ***Rubus spectabilis*** | 30 | Y | FAC |
| 7. ***Symphoricarpos albus*** | 5 | N | FACU |
| 8. ***Amelanchier alnifolia*** | 20 | Y | FACU |
| 9. | | | |
| | **60** | = Total Cover | |
| **Herb Stratum** (Plot Size: **5m**) | | | |
| 10. ***Polystichum munitum*** | 2 | N | FACU |
| 11. **moss species**** | 60 | Y | ? |
| 12. | | | |
| 13. | | | |
| 14. | | | |
| 15. | | | |
| 16. | | | |
| 17. | | | |
| 18. | | | |
| 19. | | | |
| 20. | | | |
| | **2** | = Total Cover | |
| **Woody Vine Stratum** (Plot Size: ) | | | |
| 1. ***Rubus procerus*** | 10 | N | FACU |
| 2. | | | |
| | **167** | = Total Cover | |
| % Bare Ground in Herb Stratum | | | |

**Dominance Test Worksheet:**

| | | |
|---|---|---|
| Number of Dominant Species That Are OBL, FACW, or FAC: | **3** | (A) |
| Total Number of Dominant Species Across All Strata: | **5** | (B) |
| Percent of Dominant Species That Are OBL, FACW, or FAC: | **60** | (A/B) |

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species | x1 = |
| FACW species | x2 = |
| FAC species | x3 = |
| FACU species | x4 = |
| UPL species | x5 = |
| Column Totals: (A) | (B) |

Prevalence Index = B/A = **3.4**

**Hydrophytic Vegetation Indicators:**

**Yes** Dominance Test is >50%

Prevalence Index is $\leq 3.0^1$

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: ***The indicator status of douglas fir is still being studied. One of the fir trees in this plot was growing in standing water. **We did not include the moss in the dominance calculations. We also saw a trace of the native blackberry but did not include that because the amount was <1%.**

This area passes based on the dominance test, so based on this finding hydrophytic vegetation is determined to be present.

Project Site: May Creek Valley - DNRP

## SOIL

Sampling Point: #6

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (Moist) | % | Type[1] | Loc[2] | Texture | Remarks |
| 0 – 5 " | 10YR 2/1 | 100 | | | | | Clay | Almost to black to match the Munsell |
| 5 – 18" | 10YR 2/1 | 100 | Too small, faint | 20 | C | M | Clay | Texture is even more sticky than top layer |

[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.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:**

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

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

**Restrictive Layer (if present):**

Type:

Depth (Inches):

**Hydric Soils Present?** **Yes** ☒ **No** ☐

Remarks: Both layers are clay, but the top layer is more crumbly and contains small gravels.

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface Water Present? | Yes | ☐ | No | ☒ | Depth (inches): | |
| Water Table Present? | Yes | ☒ | No | ☐ | Depth (inches): | 9" |
| Saturation Present? (includes capillary fringe) | Yes | ☒ | No | ☐ | Depth (inches): | surface |

**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: | May Creek Valley - DNRP | City/County: | King | Sampling Date: | 2-24-2010 |
| Applicant/Owner: | King County DNRP | State: | WA | Sampling Point: | Soil Pit #7 |
| Investigator(s): | Miller, Martin, Clark | Section, Township, Range: | S2, T23N, R5E | | |
| Landform (hillslope, terrace, etc.): | Valley | Local relief (concave, convex, none): | flat | Slope (%): | 0.5 |
| Subregion (LRR): | Lat: 47.51495 | Long: | -122.14239 | Datum: | |
| Soil Map Unit Name: | RdC, Bh | NWI classification: | PEM/PSS | | |

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, Or Hydrology ☐, 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 Soil Present? | Yes | ☒ | No | ☐ | **Is the Sampling Area within a Wetland?** | **Yes** | ☒ | **No** ☐ |
| Wetland Hydrology Present? | Yes | ☒ | No | ☐ | | | | |

Remarks: **This pit is located on the southwest side of May Creek near fence posts. The hole was pre-existing – it appears it may be leftover from when the fence was installed.**

## VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: **10m**) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. **None** | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | **0** | = Total Cover | |
| **Sapling/Shrub Stratum** (Plot Size: **10m**) | | | |
| 5. ***Spirea douglasii*** | 25 | Y | FACW |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| | **25** | = Total Cover | |
| **Herb Stratum** (Plot Size: **5m** ) | | | |
| 10. ***Phalaris arundinacea*** | 75 | Y | FACW |
| 11. | | | |
| 12. | | | |
| 13. | | | |
| 14. | | | |
| 15. | | | |
| 16. | | | |
| 17. | | | |
| 18. | | | |
| 19. | | | |
| 20. | | | |
| | **75** | = Total Cover | |
| **Woody Vine Stratum** (Plot Size: **10m** ) | | | |
| 1. **None** | | | |
| 2. | | | |
| | **100** | = Total Cover | |

% Bare Ground in Herb Stratum **0**

**Dominance Test Worksheet:**

| | | |
|---|---|---|
| Number of Dominant Species That Are OBL, FACW, or FAC: | **2** | (A) |
| Total Number of Dominant Species Across All Strata: | **2** | (B) |
| Percent of Dominant Species That Are OBL, FACW, or FAC: | **100** | (A/B) |

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species | x1 = |
| FACW species | x2 = |
| FAC species | x3 = |
| FACU species | x4 = |
| UPL species | x5 = |
| Column Totals: (A) | (B) |

Prevalence Index = B/A =

**Hydrophytic Vegetation Indicators:**

**Yes** Dominance Test is >50%

Prevalence Index is $\leq 3.0^1$

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: **Some riparian plantings at edge of plot were recently installed, and are too small to provide any coverage. We excluded those plantings from this plot.**

Project Site: May Creek Valley - DNRP

## SOIL

Sampling Point: #7

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

| Depth | Matrix | | Redox Features | | | | | |
|---|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (Moist) | % | Type[1] | Loc[2] | Texture | Remarks |
| 0 – 2” | Duff layer | | | | | | | Mostly reed canarygrass roots |
| 2 – 18” | 10 YR 3/2 | 80 | 5YR 5/8 | 20% | C | PL, M | 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.)**

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (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[3]:**

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

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

**Restrictive Layer (if present):**

Type:

Depth (Inches):

**Hydric Soils Present?** **Yes** ☒ **No** ☐

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface Water Present? | Yes | ☐ | No | ☒ | Depth (inches): | |
| Water Table Present? | Yes | ☒ | No | ☐ | Depth (inches): | 12” |
| Saturation Present? (includes capillary fringe) | Yes | ☒ | No | ☐ | Depth (inches): | surface |

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

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

Remarks:

# Appendix C – Wetland Photos

**Photo 1: Typical May Valley flooding looking south from SE May Valley Road in central portion of study area (January 26, 2010)**

**Photo 2: Looking south at an undeveloped portion of the wetland just east of 148th Avenue SE (January 21, 2010)**

**Photo 3: Scrub-shrub portion of the wetland near Soil Pit #1 in southwestern quadrant of the study area (January 21, 2010)**

**Photo 4: Hydric soil at Soil Pit #4 in the northwestern quadrant of the study area (January 26, 2010)**

**Photo 5: Southern extent of the wetland near Soil Pit #3 in the southeastern quadrant of the study area (January 26, 2010)**

**Photo 6: May Creek in the central portion of study area where less overbank flooding occurs due to floodplain fill (January 21, 2010)**

**Photo 7: May Creek in the eastern portion of the study area where prolonged overbank flooding occurs (January 26, 2010)**

**Photo 8: Flooded pasture areas within the wetland in the central portion of the study area (January 21, 2010)**

**Photo 9: Hydric soil in Soil Pit #6 in the northwestern quadrant of the study area (February 24, 2010)**

**Photo 10: Fill area at the northwestern side of the study area outside the wetland boundary (February 24, 2010)**

**Photo 11: Wetland area on the south side of May Creek on the west side of 148th Avenue SE (March 1, 2010)**

**Photo 12: Wetland boundary on the south side of May Creek on the west side of 148th Avenue SE where the blackberry begins to grow into the reed canarygrass (March 1, 2010)**