Wetland and Wetland Buffer Mitigation Plan Report

Pleasant Harbor Master Planned Resort
Jefferson County, Washington

for
Statesman Group

January 26, 2012

GeoEngineers
Earth Science + Technology

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File No. 12677-001-08

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INTRODUCTION

This report presents the Wetland and Wetland Buffer Mitigation Plan (Mitigation Plan) for the proposed Pleasant Harbor Master Planned Resort (MPR) near Brinnon in Jefferson County, Washington (Figure 1 – Vicinity Map). The Pleasant Harbor MPR (Master Land Use Application [MLA] 06-87) is situated on approximately 257 acres around Pleasant Harbor and Black Point in Hood Canal and will consist of an 18-hole championship golf course, residential housing, a marina and maritime village. GeoEngineers, Inc. (GeoEngineers) was contracted by Statesman Group (Statesman) to prepare a Mitigation Plan to compensate for impacts to wetland and wetland buffers as a result of the MPR. This report was prepared utilizing information obtained from site inspections, the Supplemental Environmental Impact Statement (SEIS) for the Pleasant Harbor MPR, and the Final Environmental Impact Statement (FEIS) (Jefferson County, 2007), and addresses the current preferred alternative site plan for the MPR (Figure 2 – Site Map). This Mitigation Plan proposes to compensate for wetland impacts with on-site and in-kind wetland creation following the guidelines for compensatory mitigation as outlined in the Washington State Department of Ecology (Ecology) *Wetland Mitigation in Washington State* report (Ecology, 2006a and 2006b), Jefferson County Code (JCC) Chapter 18.22 Part 350 Mitigation (Jefferson County, 2008) and to meet the condition(s) set forth by Jefferson County for wetlands and buffers (MLA 06-87, Ordinance 01-0128-08). The local jurisdiction and lead environmental review authority is Jefferson County.

REPORT SCOPE

Statesman is requesting approval for wetland alteration through Jefferson County and Ecology. Ecology will review this request using administrative orders of the state Clean Water Act (90.48 RCW) under the standards of the 401 Water Quality Certification process (WAC 173-201A). The United States Army Corps of Engineers (USACE) has determined that the on-site wetlands identified in the report titled *Pleasant Harbor Marina and Golf Resort Wetland Delineation* (GeoEngineers, 2006a) are hydrologically isolated; and therefore, are not regulated as waters of the United States (Appendix A). A Draft Wetland Mitigation Plan Report was prepared in August 21, 2008 and reviewed by Jefferson County. The comments and suggestions were incorporated in this Final Wetland Mitigation Plan Report.

The conceptual and final mitigation plans prepared by GeoEngineers will comply with the JCC pertaining to wetland protection and mitigation criteria, mitigation conditions of the MLA and Ecology's *Wetland Mitigation in Washington State: Part 2 Developing Mitigation Plans*, which has been approved by the USACE and the United States Environmental Protection Agency. This Mitigation Plan was compiled based on site topography, on-site field reconnaissance and a review of preliminary development plans.

This Mitigation Plan strictly covers conditions and plans as they relate to wetland alteration. There are five streams located within the MPR and buffer mitigation plans have been developed for those streams in a separate Habitat Management Plan (HMP) produced by GeoEngineers in conjunction with this report (*Habitat Management Plan, Pleasant Harbor Master Planned Resort* [GeoEngineers, 2012]).

PROJECT LOCATION

The Pleasant Harbor MPR is located along the western shoreline of the Hood Canal surrounding Pleasant Harbor and on Black Point in Sections 15 and 22 of Township 25 North, Range 2 West of the Willamette Meridian. The MPR property, herein referred to as the site, consists of 13 parcels (50215-2005, -2012, -2013, -2014, -2015, -2016, -3002, -3003, -3020, -3021, -3022, -3023 and -4002) and is approximately 1.5 miles south of Brinnon in Jefferson County, Washington (Figure 1-Vicinity Map). The site is located in the Skokomish-Dosewallips Water Resource Inventory Area (WRIA 16) and is part of the East Olympic and Hood Canal Basins. The approximately 257 acre site (15.2 acres of Washington State Department of Natural Resources [DNR] Lease) is partially developed and comprised of three main development sections as identified in Figure 1. Section 1 (Golf Course/Golf Resort) is approximately 221 acres on Black Point, which extends east approximately 1 mile into Hood Canal, and was historically used as the Pleasant Harbor RV Park. Sections 2 and 3 (Marina/Maritime Village) consist of approximately 36 acres, 15 of which are aquatic and leased from the DNR, and are located on the northwest shoreline of Pleasant Harbor, a shallow cove of Hood Canal north of Black Point. Currently, Sections 2 and 3 are being utilized for a variety of purposes including business (real estate office), recreational (the marina) and commercial (restaurant and convenience store).

PROJECT DESCRIPTION

Statesman intends to develop a mixed-use resort development on the 257-acre site. Although two project alternatives and a no action alternative (three alternatives total) have been developed, the basic project description remains consistent within the three sections. Section 1 of the proposed Golf Course/Golf Resort development (sometimes referred to as Black Point Properties) will consist of an 18-hole championship golf course, club house, residential facilities and associated amenities. Sections 2 and 3 will include the mixed-use Maritime Village and Marina. Photographs of the three sections are located in Appendix B-Site Photographs. The kettles that are referred to in the alternatives descriptions below are shown on Figure 1.

Description of the MPR Proposal and Alternatives

The site plan alternatives being evaluated in the Pleasant Harbor MPR SEIS include a revised site plan developed during 2011 to make more efficient use of the site, to minimize environmental impacts, and to address Jefferson County Board of County Commissioners (BoCC) conditions of approval (Alternative 1); and the current (2011) site plan revised from the Alternative 1 version, predominantly in response to the Jefferson County locally-approved Shoreline Master Program (SMP) update (December 2010) that increases the Shoreline buffer in the Marina/Maritime Village area from 30 feet to 150 feet (Alternative 2). More descriptive information about each alternative is provided below.

Features Common to Any Action Alternative

Each of the site plan alternatives includes an 18-hole golf course, 890 residential units, and commercial development for resort-related services within the Pleasant Harbor MPR. The location, configuration, type and number of residential units and commercial space differ somewhat

between the alternatives, as do the amenities to be provided within the development. Structures within the existing Pleasant Harbor Marina would be renovated or replaced, in both alternatives.

Under either alternative, improvements would be made to Black Point Road, and to the intersection of Black Point Road with U.S. Highway 101. A 12-ft wide (with turn-outs) Marina Access Drive would be improved parallel to the east side of U.S. Highway 101 between Black Point Road and the existing marina. In order to keep Resort traffic internal to the site to the maximum extent practicable, the Marina Access Drive would be used by visitors to travel between the main entrance parking lot and the marina. This drive would accommodate two-way shuttle vehicle service and emergency vehicle access between Black Point Road and the marina. Access to the Golf Course/Golf Resort from Black Point Road would be controlled by a gate with a guard house.

Parking for slip owners and Resort visitors would be created at the intersection of Black Point Road and U.S. Highway 101, with shuttle service from the parking area to the marina using the Marina Access Drive. The existing real estate office at this intersection would be eliminated. Provisions would be made for this use within the commercial space of the Maritime Village. Other types of commercial uses anticipated within the Marina Village include a possible restaurant, dive shop, sightseeing cruises, gifts, and an upgraded grocery store/convenience store and deli.

The proposed architectural concept for the buildings within the Marina/Maritime Village is a Cape Cod waterfront style incorporating some stone and cedar accents. Buildings in the Golf Resort, integrated around the golf course, are proposed in the style of a rustic mountain resort, with stone detailing, cedar accents, and high-gabled roof elements.

Under either site plan alternative, the main building at the Golf Resort would be the Golf Terrace and Conference Center/Spa. At four stories in height (approximately 48 feet) for Alternative 1 and five stories in height for Alternative 2 (approximately 70 feet) and located at approximately elevation 260 feet mean sea level (msl), this would be the tallest building within the development. A three-story Maintenance Building/Staff Quarters located near the gated entry to the development is also a consistent feature of proposed development under either action alternative. The maintenance portion of this building would provide ground-level golf cart and mower storage, and servicing and maintenance supplies for the grounds and golf course. Residential units (52) in the upper two stories would provide housing for employees. Employee parking would be provided in a surface lot associated with the Maintenance Building/Staff Quarters.

The MPR would be mostly self-sufficient with regard to utilities. An on-site wastewater treatment plant is proposed, capable of producing Class A reclaimed water for beneficial reuse within the development. Statesman Corporation received approval of water rights from the Washington Department of Ecology on June 15, 2010 to serve the site. One or more wells and a water storage tank will be completed on the property. Stormwater management systems for the control and treatment of runoff during construction and in the completed condition of the development would be provided on the site in accordance with the Washington Department of Ecology 2005 *Stormwater Management Manual for Western Washington*.

Under either alternative site plan, golf course fairways would be located in areas of permeable soils to allow for infiltration of storm water runoff to recharge the local groundwater aquifer. The first nine golf course fairways would be developed along the eastern side of the site. The second nine

fairways would be developed along the south and west sides of the property. Portions of the area to be used for Golf Course development would be left undeveloped (or restored) for the retention of wetlands and buffers, and for storage of golf course irrigation water (Class A reclaimed water from the wastewater treatment plant process, and site runoff directed to Kettle B). Existing local depressions throughout the site would be used to collect and retain runoff for infiltration.

The proposal includes preserving a riparian buffer along the south/southwest bluff of the peninsula. This buffer would permanently preserve the 200-foot wide shoreline environment and the steep slope setback (up to an additional 35 feet wide in places) in a conservation easement to be administered by one or more local Tribes.

Alternative 1

The Alternative 1 site plan was developed through the BoCC conditions of approval and in response to the Jefferson County locally-approved SMP update (December 2010), that requires a 150-ft shoreline buffer in the marina upland area compared to the 30-ft setback in the adopted SMP (1989; revised 1993, 1996, and 1998). The shoreline buffer (i.e., an area where no new structures would be allowed) significantly modified the Marina Center/Maritime Village development concept for the MPR.

Redevelopment for maintenance, repair and renovation is now limited to occur within existing building footprints in the Marina Center (marina upland) area. Therefore, residential and commercial development proposed in the FEIS site plan for this area is relocated in the Alternative 1 site plan to a new three-story building proposed at the intersection of Black Point Road and U.S. Highway 101. A new Marina Lofts building at the intersection would include 36 residential units on the east (rear) side of the building with two stories (12,500 square feet [sf]) of commercial space at the front (west side, facing U.S. Highway 101). Parking would be provided in surface parking lots at this intersection for visitors, residents and marina slip owners. An increase in surface parking would be created on the north side of Black Point Road by a more southerly realignment of the Black Point Road/U.S. Highway 10 intersection in Alternative 1. Marina rowhouses, townhouses and stepped/stacked townhouses, illustrated in the FEIS, would be eliminated from the site plan on the north side of Black Point Road in Alternative 1. A new residential-type structure is proposed in this area of the Alternative 1 site plan to accommodate group gatherings. Two of these buildings are proposed: Reunion House and Harbor View House. They would provide a common area and kitchen facilities for rental residents staying in 12 individual rooms. The Marina Access Drive would be upgraded to provide access to these two buildings. The Bed and Breakfast Harbor House owned by others would remain, with a corresponding minor reduction in the overall developable land area within the MPR compared to the approved FEIS. The Pleasant Harbor House owned by Statesman may be renovated, with no change to the footprint of the structure. The existing swimming pool and change room building for marina slip owners would be retained with minor modifications, or reconstructed. Existing buildings in the marina upland area would be reconstructed within their existing footprints to house the marina office, a bistro/lounge, showers, washrooms, and self-service laundry. The existing roadway system and parking areas at the waterfront would be widened and improved to provide better curve radii, as required by fire regulations. This would improve safety and ease of access for large vehicles like garbage collection trucks and emergency vehicles, and provide better connectivity for boaters between short-term parking and the head of docks for transport between their vehicles and their boats. The

one-way access (Marina Access Drive) from Black Point Road to the waterfront proposed in the FEIS would be used in Alternative 1 for two-way shuttle service and emergency vehicle access between the Maritime Village improvements at the Black Point Road/U.S. Highway 101 intersection and the marina. Access to the Washington State Department of Fish and Wildlife (WDFW) boat launch would be revised to incorporate it with the four-way intersection of Black Point Road and the Maritime Village and Golf Resort entrances. The total number of residential units within the Maritime Village area of the MPR would be reduced to 66 new units in three new buildings, and the existing Pleasant Harbor House, and the Bed and Breakfast House (owned by others).

Residential units would be increased to 828 in the Golf Course/Golf Resort area, transferred from reduced development in the Marina/Maritime Village area of the site. In order to reduce the built or impervious footprint on the site, the majority of residential units (500 units) are now housed in four Golf Terrace buildings; each four stories in height. The number of original Black Point Townhouses and Villas has been reduced and renamed the Golf Vistas (76 units, a two story product on an underground parkade) and 200 Sea View Villas (a one story product on and underground parkade). The staff quarters and maintenance building has been relocated from the northwest corner to the northeast corner of the site, but still contains 52 units and remains at three stories in height. Golf course fairways have been modified slightly from the FEIS proposal. Tennis courts have been added adjacent to three Golf Terrace buildings, as well as a swimming pool next to Golf Terrace 3 building. Other Alternative 1 recreational amenities proposed adjacent to the Golf Terrace 1 building include a bocce ball court, pool and deck area.

The Alternative 1 on-site electrical power generation proposal would utilize an integrated system of geothermal (geo-exchange) technology, combined heat and power (CHP) derived from co-generation systems fueled by biodiesel, and limited use of available power from Jefferson County Public Utility District (JCPUD).

The landscaping proposal includes re-vegetating disturbed areas using healthy trees and shrubs harvested from areas of the site that will be cleared. Consideration will be given to the use of native vegetation as well as ornamental shrubs, perennials and annuals in select locations at the Marina Center, Maritime Village, and Terrace buildings, and along meandering pathways. Landscape restoration in the Marina Center (marina upland) area of the site is planned to create a park-like setting, with amenities for seating and sun-rain protection. The proposal includes creating a temporary native plant nursery south of the wastewater treatment plant site in the area of Fairway 14, as this fairway will be developed during Stage II construction. A sprinkler irrigation system using Class A reclaimed water generated by the treatment process will be installed to temporarily maintain plants kept in this area for relocation during phased development of the site.

Alternative 2

The Alternative 2 site plan was modified to improve constructability by refining the development within the existing conditions of the site to minimize environmental impacts. The redesign of the golf course to flow within the existing contours and to minimize site disturbance was a fundamental factor. The positioning and placement of the buildings were adjusted to ensure that they are placed on undisturbed soil and to work within the contours.

The Marina Center (marina upland) area has remained as designed in Alternative 1, with minor changes taking place in the Maritime Village area. The Maritime Village building now includes 42 residential units on the east (rear) side in three stories, with two stories of commercial space (16,000 sf) at the front. The available parking has increased with the addition of an underground parkade for residents and staff of the commercial spaces and surface parking lots at the intersection of U.S. Highway 101 for visitors and Marina slip owners. The Reunion House, Harbor View House, Pleasant Harbor House and the Bed and Breakfast Harbor House would all remain the same as Alternative 1. The entire marina upland area would also remain as designed in Alternative 1. The designed intersection of Black Point Road and the access to the WDFW boat launch has been relocated approximately 1,300 feet to the east of its current location.

Residential units would be decreased by six in the Golf Course/Golf Resort area; transferred from the increased Maritime Loft building of Alternative 1. In order to reduce the built area, the Golf Terrace buildings have been increased from four to five stories in height (approximately 60 feet for Terrace 2, 3 and 4, and 70 feet for Terrace 1). The total number of units within the Golf Terrace buildings has increased by 20 units to 520 from the Alternative 1 layout. The number of Sea View Villas has been increased by six units to 206 units total. The Golf Vista units have been decreased to a total of 44 units. The Maintenance Building/Staff Quarters building and waste water treatment plant remains the same as Alternative 1. Building positioning has been revised to allow foundations to be placed on undisturbed soil for the majority of buildings, which allows them to work with the existing site contours more efficiently than Alternative 1. The golf course has also been redesigned to allow it to flow and be worked into the existing site conditions. The Alternative 2 recreational amenities have also been repositioned to work better with the existing site layout.

The Alternative 2 on-site electrical power generation proposal would utilize an integrated system of geothermal (geo-exchange) technology, CHP derived from co-generation systems fueled by biodiesel, and limited use of available power from JCPUD.

The landscaping proposal includes re-vegetation of disturbed areas using healthy trees and shrubs harvested from areas of the site that will be regraded, but the amount of disturbed areas will be significantly reduced from the Alternative 1 plan. Native vegetation, as well as ornamental shrubs, perennials and annuals, will be placed in select locations at the Marina Centre, Maritime Village and Terrace buildings, and along meandering pathways. The landscaping in the Marina Center will follow the Alternative 1 concept.

No Action Alternative

If the Pleasant Harbor Marina and Golf Resort did not proceed, it is presumed (based on the Comprehensive Plan MPR designation for the property and absence of site-specific zoning[1],) that the site would not be further developed at this time. The owner would continue to operate the 285-berth marina and could perform maintenance, repair and replacement on existing improvements until a MPR could be successfully implemented, either by the present owner or by others, or the zoning could be changed back to rural residential through a comprehensive plan

[1] The No Action Alternative from FEIS is still valid since the zoning will not change until the Development Agreement and Zoning regulations are signed by BoCC – see *Citizens v. Mount Vernon*.

amendment. Campground use of the Black Point Peninsula property could resume under the existing Conditional Use permit MLA03-00577.

Preferred Alternative

After thorough review of each alternative, it was determined that Alternative 2 was the preferred choice for development project. Therefore, this report has been written addressing Alternative 2 and the other alternatives will not be addressed further. Alternative 2 site plan is shown on Figure 2.

Phased Development Proposal

Statesman proposes to complete the Pleasant Harbor Marina and Golf Resort over the course of approximately 10 years, or in response to market demand.

STAGE I: Phase 1

- Begin clearing drainage basins that produce no runoff leaving the site (Basins 2, 4, 5, 6, 8, 9, 10, 11, 12 and 13) and that will provide excavated material for construction aggregate material processing, or for mass fill of Kettles B and C. The entire Kettle B area will be cleared. Large areas where deep excavation is proposed lie to the south, west, and north of the kettle. Kettle B will receive approximately 300,000 cubic yards of fill before it can be finish-graded and lined with synthetic liners to start receiving site runoff and Class A effluent from the wastewater treatment plant. Liners could be installed during the wet season, though dry season installation is preferred. Open channels and culverts will be constructed to convey surface water runoff overflows to infiltration areas within golf course fairways.
- Place erosion control measures and redirect runoff into the large kettle (Kettle B) prior to clearing and rough-grading to create the construction aggregate material processing site/plant(s). The relatively flat, centrally-located site proposed for materials processing is at the base of one of several 40-foot + cut areas. This processed material will be the source of construction and fill materials for early phases of the project. As excavation progresses and runoff is directed northward, Drainage Basin 2 will be expanded to the south, which will allow for additional clearing. If clearing is limited to the south edge of Drainage Basin 2, work could progress into the wet season. Existing roads on the site could be used to transport materials.
- Build the construction aggregate material processing plant and begin operations.
- Construct the 260,000 gallon underground water storage facility and water piping to the existing well. Rough-grade the resort road from the water storage facility to Black Point Road. Install water main and sewer piping from the water storage facility to Black Point Road in the resort road alignment.
- Install erosion control measures along the base of the wastewater treatment plant site prior to clearing. Place fill material behind a retaining wall to create the site for construction of the wastewater treatment plant. Construct the treatment plant. Construct the co-generation unit to power the treatment plant.
- Clear area south of treatment plant site to create a temporary native plant nursery for trees and shrubs removed during site development that will be relocated within the project area.

STAGE I: Phase 2

- Develop the second on-site well. Connect the well to the domestic water distribution system as soon as practicable after rough grading the areas through which this piping must be routed.
- Place erosion control measures at the edge of the buffer along the east property line of the Maritime Village area of the site prior to clearing. Grade the building, parking, and entry roads to prepare this area for construction.
- Install erosion control measures along the existing (unpaved) marina access drive that parallels U.S. Highway 101.
- Widen and reconstruct the Marina Access Drive between Black Point Road and the marina.
- Install erosion control measures, implement traffic controls, and relocate utilities in preparation for constructing improvements to the Black Point Road/U.S. Highway 101 intersection relocation and expansion. Reconstruct and realign Black Point Road and expand U.S. Highway 101. Underground utility services must cross Black Point Road. The WDFW boat launch access road intersection with Black Point Road will be reconfigured and reconstructed concurrent with the Black Point Road/U.S. Highway 101 intersection reconstruction.
- Install the sewage collection system, water distribution/temporary fire-protection system, reuse water systems, electrical power transmission, and communications facilities to serve the wastewater treatment plant, the marina area, and Maritime Village Building.
- Construct Maritime Village building, Harbor View House, Reunion House, roads, utilities, and parking lots.
- Widen existing roadways to 20 feet for two-way and 12 feet for one-way travel, and provide turnarounds. Construct a new section of road between the existing marina access road and upper parking area to increase the curve radius for larger vehicles including firefighting equipment.
- Clear and excavate the small "hill" from U.S. Highway 101 on the north side of the marina access road to improve sight distance and visibility for entering vehicles.
- Relocate the fuel storage tanks and equipment closer to U.S. Highway 101, near the unused pool.

STAGE I: Phase 3

- Relocate existing marina office, convenience store, deli, and self-service laundry to the new Maritime Village building.
- Remodel/reconstruct the Marina Center (marina upland) commercial uses.
- Remodel/reconstruct existing swimming pool and change building at the marina.
- Install sewage pumps and force mains to convey sewage from the marina and marina upland facilities to the wastewater treatment plant. Abandon the existing septic tank drain field that now serves the marina buildings and moored vessels.

STAGE II: Phase 1

- Construct the wetland in the bottom of the south kettle (Kettle C). Kettle C is to be converted to a created wetland with an enhanced buffer. The bottom of the basin will be filled

approximately 30 feet to create a depressional kettle wetland. Fill materials will be selected from on-site materials that have low permeability, such as those that may be found in the existing wetland to be filled in the large kettle (Kettle B). Buffer enhancement will include clearing invasive plant species and replacement with native plant material harvested from the site or purchased from local nurseries. Temporary irrigation may be required for the wetland and the buffer plantings to improve the survival rate during the first growing season. The existing closed drainage basin and the drainage basin created in the developed condition around Kettle C will provide and maintain hydrology for the created wetland. When wetland creation in Kettle C is complete, construct a fence around the buffer edge to prevent construction activities and resort visitors from entering and potentially damaging the wetland and buffer vegetation.

- Place erosion control measures along the east property line buffer of the Golf Course/Golf Resort area of the site near Black Point Road to prepare this area for construction of the Golf Terrace 1 access road. Excavated materials from the Maintenance Building/Staff Quarters area and from Fairways 3 and 4 could be used to construct this road embankment. Install the storm drainage system within the road to direct runoff to storm water treatment and detention facilities.
- Complete the Golf Terrace 1 building pad and associated parking areas. This construction may not require significant additional erosion control measures since the runoff can be directed to the enclosed drainage basin to the south.
- Install the sewage collection system, water distribution system, fire protection system (a function of the fairway/landscape irrigation system), reuse water systems, power transmission, and communications facilities to serve the Golf Terrace 1 building, and the Maintenance Building/Staff Quarters.
- Install erosion control measures and clear sufficient area during the dry season to rough-grade Fairways 11 and 12 and construct the embankment for Fairway 10, including a lined detention pond. This grading will form Drainage Basin 1. Large areas of excavation lie to the east and west of Fairway 10 and the building site to the north. The detention pond will have a synthetic liner to prevent soil saturation. Pumps will be permanently installed adjacent to this pond to move collected runoff northward into the irrigation pond (Kettle B). These pumps will be powered by cogeneration units. Construction of the embankment, pond, pumps, force mains, and soil stabilization must be completed during the dry season. It might be necessary to delay completion of Fairways 7, 8, 9, 10 and part of Fairway 11 until the dry season in the following year.
- Install erosion control and wetland buffer area protection along the west side of Wetland D (along the east property line of the Golf Course/Golf Resort area of the site) before work begins on Fairways 3, 5, 6 and 8. Since this drainage basin (Basin 10) discharges to Wetland D and then off site, it may require that clearing and grading in this area occur in the dry season.
- Fairways 1, 2, 3, 12, 13, 14, 15, 16, 17, and 18 could be worked during wet weather. The area north of Fairway 14 may require additional erosion control measures near the wastewater treatment plant site in order to work during wet weather conditions. The preferred method of fairway construction will proceed in the order of clearing and grubbing, rough grading, drainage installation, irrigation installation, fine grading, and seeding progressing along the fairways

using specialized types of equipment. This will allow a minimum of clearing and grubbing to occur and will reduce the amount of time the ground is being actively worked. The fairways in many cases can be seeded and stabilized before the wet season arrives.

- Rough-grade roads, driveways, and building pads for improvements that will be made in Stage II Phase 2 and Stage II Phase 3 as part of adjacent fairway construction. Installation of underground wet and dry utilities can be delayed until the Stage II Phase 2 and Phase 3 building construction occurs. Sanitary sewer service will require pumping raw sewage from the south-central portion of the site. A pump station will be required near the south end of the pond (Kettle B).

STAGE II: Phase 2

- Install erosion/sedimentation control measures around building construction sites to protect completed portions of the golf course (if any). Buildings to be constructed in Stage II include Golf Terrace 2 west of Fairway 16; Golf Terrace 3 north of Fairway 12; Golf Terrace 4 east of Fairway 17; Golf Vistas south of Fairway 15 and west of Fairway 18 and the Maintenance Building/Staff Quarters north of Fairway 4.
- Extend roads and utility services to the Stage II Phase 2 building sites.
- Construct two sanitary sewer pump stations: one to the west of Kettle B to serve building construction to the west and southeast, and one adjacent to the Maintenance Building/Staff Quarters to serve that building and buildings to the south.
- Construct the sanitary sewer pump station and co-generation unit at the Maintenance Building/Staff Quarters.
- Reconstruct Black Point Road from the end of Stage I Phase 2 intersection improvements east of U.S. Highway 101 to the resort east entrance in the northeast corner of the Golf Course/Golf Resort area of the site. Install erosion/sedimentation control measures, as required.

STAGE II: Phase 3

- Install erosion/sedimentation control measures around building construction sites for the Sea View Villas adjacent to Kettle B, north of Fairways 10 and 11, west of Fairway 8, and south of Fairway 4; and Golf Vistas east of Kettle C.
- Extend roads and utility services to the Stage II Phase 3 building sites.
- Construct the sanitary sewer pump station at the southeast corner of the site to serve the Sea View Villas west of Fairway 7, north of Fairway 10, and north of Fairway 11.

PROPOSED MITIGATION PROJECT

Mitigation Project Description

The MPR will incorporate an on-site water treatment and recycling program into the layout of the golf course and residential dwellings in Section 1 (Golf Course/Golf Resort). The on-site water program will impact one wetland (Wetland B within Kettle B) that will be used as a control pond for the water treatment system. This pond will collect water from the MPR and recycle for use by the golf course irrigation system. The on-site recycling of water will decrease the amount of fresh water

necessary to operate the Golf Course. This pond will also be used as a driving range for golfers. Wetland B is described in more detail in the report entitled *Pleasant Harbor Marina and Golf Resort Wetland Delineation* (GeoEngineers, 2006a).

Wetland B is located at the bottom of Kettle B in the center of Section 1 (Figure 3). A kettle is a geologic landform often created from isolated blocks of ice from receding glaciers that were buried by glacial outwash. Once the ice melted, a depression was created where the ice once resided. Statesman is proposing to partially fill and collect recycled water within Kettle B; thus, impacting Wetland B. The fill will impact 20,693 square feet (0.475 acres) of Category III scrub-shrub wetland and associated buffers. Both Ecology and Jefferson County have set their wetland mitigation ratio for creation to offset impacts to Category III wetlands at 2:1 (creation: impact). The purpose of this report is to provide a Mitigation Plan for the compensatory creation of new wetland features and wetland buffers as well as the enhancement of existing wetland buffers on-site and in-kind.

Wetland B was originally rated as a Category II wetland (GeoEngineers, 2006a). However, due to the adoption of a new Jefferson County critical areas ordinance (JCC Chapter 18.22) in March of 2008, which requires the use of Ecology's 2004 *Washington State Wetland Rating System for Western Washington* (Ecology, 2004), GeoEngineers biologists re-rated Wetland B using Ecology's 2004 rating system and concluded that it is a Category III wetland as presented in Appendix C - 2004 Western Washington Rating Forms.

An overview plan of the proposed MPR depicting the golf course layout, buildings, maritime village, marina and critical areas is presented in Figure 2. Statesman is planning to begin construction of the MPR in the summer of 2012 and the construction is expected to last for approximately 10 years. This Mitigation Plan will be implemented after Wetland B is cleared of vegetation, filled and lined. The anticipated start date for the mitigation construction activities is also the summer of 2012. The approximate time period for construction of the mitigation wetlands and buffers is four months.

The proposed mitigation project sequencing after Wetland B is cleared of vegetation, filled and lined will occur as follows:

- Fill and grading of the mitigation site to the proposed elevations,
- Planting of identified mitigation vegetation species,
- Re-vegetating the disturbed areas,
- Enhancing existing wetland buffers,
- Installing a fence around the wetland mitigation site and associated buffer, and
- Cleaning up and demobilizing from the mitigation site.

BASELINE CONDITIONS

Black Point Description

Existing land use on the Black Point Peninsula (Golf Course/Golf Resort) is predominantly low-density residential. The peninsula was previously logged, and single-family homes have been constructed on the west and east sides. The northern end of the peninsula is undeveloped. WDFW owns approximately 30 acres of forest land on the northern portion of the peninsula. Improvements on WDFW land include a public boat launch and picnic area with access from Black Point Road.

A period of glaciation occurred in the Puget Sound Lowland approximately 30,000 to 15,000 years ago. It is likely that the glacial ice advanced and withdrew several times over the project area during the glacial period, depending on climatic conditions. Thus, geologic material beneath the site consists of sand and gravel outwash with some glacial till exposures. Depressions and hummocks formed in glacial outwash material deposited on and around stagnant glacial ice as the underlying ice melted. Numerous potholes identified on the property are "kettles" formed as sand and gravel was deposited around stagnant ice blocks that subsequently melted. Several of the kettles have silty soils in the bottom overlying sand and gravel. Three main kettles have been identified as Kettle A, B and C (Figure 1). Three wetlands (Wetlands B, C and D) have been identified on the proposed MPR site: one (Wetland B) in the largest kettle (Kettle B), a second (Wetland C) in a local depression southeast of the largest kettle, and a third that extends off-site along the east property line (Wetland D). No wetlands were identified in Kettles A and C.

The topography of the site ranges from sea level to about Elevation 320 feet msl on the peninsula, and from sea level to about Elevation 100 feet msl in the marina area (approximately Elevation 150 feet msl at the intersection of Black Point Road with U.S. Highway 101). Slopes on the peninsula range from less than 2 percent in the western portion to 100 percent in the area of steep coastal bluffs along the south boundary. The high point on the peninsula (at existing grades) occurs in the southeast portion of the proposed MPR site, east of Kettle C.

The site was logged by others prior to 1970. Historical aerial photographs reproduced in the *Forestry Report* prepared for the Pleasant Harbor MPR show that the area now occupied by the Pleasant Harbor Marina was once used for log rafting and a log dump. The existing narrow loop road on the slope and along the waterfront was created by others to serve these uses.

Vegetation found on the property consists primarily of an overstory of Douglas-fir (*Pseudotsuga menziesii*), with occurrences of red alder (*Alnus rubra*), black cottonwood (*Populus trichocarpa*), bitter cherry (*Prunus emarginata*), bigleaf maple (*Acer macrophyllum*), and Pacific madrone (*Arbutus menziesii*). Broadleaf shrubs and other plants found in the understory include: red-flowering currant (*Ribes sanguineum*), Scot's broom (*Cytisus scoparius*), vine maple (*Acer circinatum*), salal (*Gaultheria shallon*), and evergreen huckleberry (*Vaccinium ovatum*).

The site is within the East Olympic and Hood Canal River basins, and within the Skokomish-Dowewallips Water Resource Inventory Area (WRIA 16). Intermittent streams flow through the Maritime Village and marina upland area of the site north of Black Point Road (runoff from U.S.

Highway 101 and the hillside above) and discharge into Pleasant Harbor. There are no existing stream courses on the Golf Course/Golf Resort portion of the property.

Existing utilities of the site include electrical power, propane gas, potable water from wells, wastewater treatment and disposal in on-site sewage disposal systems, telephone, and solid waste collection and transport.

Wetland Descriptions

Wetland B is located at the bottom of the largest kettle in the center of the Golf Course/Golf Resort (Section 1) as shown in Figure 3. The kettle, Kettle B, is approximately 140 feet deep with moderately steep slopes that were formed in glacial till. The catchment basin for Wetland B is approximately 30 times the size of the wetland and the main source of hydrology comes from precipitation and localized surface run-off within the catchment basin. There are two other wetlands (Wetland C and D) located within the boundaries of Section 1 as shown in Figure 3. The proposed project will impact the buffers of Wetlands C and D but will not impact the wetland habitat. These two wetlands are discussed in detail in the wetland delineation report (GeoEngineers, 2006a). The wetlands are listed on the National Wetland Inventory (NWI) map (United States Fish and Wildlife Service, 1987) as presented in Figure 4-National Wetland Inventory Map, but are not located within a Federal Emergency Management Agency 100-year floodplain. All of the identified on-site wetlands were determined to be isolated wetlands and not federally jurisdictional as outlined in the jurisdictional determination from the Corps of Engineers dated March 27, 2007 (Appendix A). Photographs of the on-site wetlands are shown in Appendix B – Site Photographs.

ASSESSMENT OF THE IMPACTS AT THE DEVELOPMENT SITE

Although buffer averaging is proposed as part of this project, only wetland habitat within Wetland B will be impacted from the development activities. Wetland B is 20,693 square feet in size and the entire wetland is being proposed for fill. This section of the report focuses on Wetland B because it is the only wetland habitat that will be directly impacted by this proposal. Buffer averaging will be discussed below in the mitigation site plan sections.

Water Regime

Seasonal precipitation and localized run-off is the primary source of hydrology for Wetland B. The moderately steep slopes of Kettle B capture water as it falls into the basin and directs it into bottom of the kettle. Signs of inundation in Wetland B include marks of ponded water up to two feet on vegetation, water stained leaves, adventitious roots and buttressed tree trunks. Other signs of hydrology included signs of saturation within 12 inches of the surface, specifically including oxidized rhizospheres, low-chroma soils and hydrophytic vegetation. Hydrology appears to be present on a seasonal basis likely starting in the late fall and ending in the spring.

Kettle B will be filled with water and the water level will be maintained for use in the water recycling system and the golf course driving range. The kettle and pond will still collect the same amount of direct precipitation from the site. The water in the filled kettle will be incorporated into the

irrigation system for use on the golf course. Filling Wetland B with water will create a larger, deepwater hydrologic feature that can be used as habitat for waterfowl and amphibians.

Soils

Hoodsport–Grove very gravelly sandy loam is mapped within the Wetland B (Figure 5-Soils Survey Map). This soil is generally found in upland areas and is associated with glacial till that typify the surrounding landscape (United States Department of Agriculture [USDA], 1975). Hoodsport–Grove very gravelly sandy loam is a moderately well drained soil type and is not listed as hydric on the Jefferson County Hydric Soils List (USDA, 2001). The soils within Wetland B will be covered with an impermeable layer and then the kettle will be filled with water to the desired level.

Vegetation

Wetland B is classified under the Cowardin Rating System (Cowardin *et al*., 1979) as a Palustrine scrub-shrub wetland and is currently undeveloped. Wetland B is densely occupied by native scrub-shrub and emergent wetland vegetation. Vegetation within Wetland B is dominated by: false lily-of-the-valley (*Maianthemum dilatatum,* FAC [Facultative]); slough sedge (*Carex obnupta,* OBL [Obligate]); hardhack (*Spiraea douglasii,* FACW [Facultative Wet]); and juvenile red alder trees (*Alnus rubra,* FAC). The wetland buffer is intact and consists of moderately steep slopes, with a multi-layer second-growth forest dominated by Douglas fir (*Pseudotsuga menziesii,* FACU [Facultative Upland]) and western hemlock (*Tsuga heterophylla,* FACU), with an understory of western sword fern (*Polystichum munitum,* FACU), salal (*Gaultheria shallon,* FACU), red huckleberry (*Vaccinium parvifolium,* FACU) and evergreen huckleberry (*Vaccinium ovatum,* UPL [Upland]). The kettle has been historically logged and the existing vegetation is approximately 50 years old. A query of DNR Natural Heritage Features list revealed no presence of rare or sensitive plants in or within the vicinity of Wetland B (DNR, 2010). The construction of the control pond for the water treatment system in the kettle will require the removal of vegetation on the slopes and within Wetland B; therefore, vegetation in Wetland B and its corresponding buffer will be removed.

Fauna

Wetland B contains seasonal open-water and emergent and scrub-shrub vegetation that provide food, hiding cover and shelter currently supporting a variety of wildlife species including mammals, birds, reptiles and amphibians. During our field visits, we observed numerous bird species, as well as tracks and signs from various wildlife species such as black-tail deer and coyotes. Wetland B is not directly connected to streams, tributaries or other wetlands that could provide habitat for fish species. A review of a WDFW Priority Habitat and Species (PHS) map (WDFW, 2008) shows no presence of critical habitat or sensitive species on or within the vicinity of the development site. The report titled *Pleasant Harbor Marina and Golf Resort Fish and Wildlife Habitat Assessment* (GeoEngineers, 2006b) described the fish and wildlife presence and habitat quality on and within the vicinity of the site. The filling of Wetland B and corresponding buffer will result in the loss of habitat primarily used by birds, mammals and reptiles, but, in return, will create additional habitat for waterfowl and amphibians.

Landscape Position and Geomorphology

Wetland B is positioned at the bottom of the watershed and collects precipitation runoff from the slopes surrounding the kettle. Hydrologic input enters the wetland but does not directly discharge

back into the watershed due to its depressional and isolated nature. Wetland B was classified using both the Cowardin System (Cowardin *et al*., 1979) and the Jefferson County four-tiered rating system that corresponds to the 2004 Ecology rating system as shown in Table 1. Wetland B is rated as a Category III wetland within an area planned for a high intensity land use and a high score for habitat value. A copy of the 2004 Ecology rating form for Wetland B is located in Appendix C.

TABLE 1. CATEGORIZATION AND AREA OF WETLAND B

Area in Square Feet (acres)	Cowardin Rating System			Jefferson County Rating	Buffer Width (feet)
	System	Class	Water Regime		
20,693 (0.475)	Palustrine	Scrub-shrub	Seasonally Flooded	III	150

Functions

GeoEngineers used Ecology's wetland function assessment (Hruby *et al*., 1999) methods for depressional closed systems. The results of the functional assessment for Wetland B are presented below in Table 2.

TABLE 2. FUNCTIONAL ASSESSMENT OF WETLAND B

Function	Quantitative Index (0 is low; 10 is high)	Opportunity Ranking (Qualitative)
Water Quality		
Removing Sediment	10	High
Removing Nutrients	5	Moderate
Removing Heavy Metals and Toxic Organics	5	Moderate
Hydrology/Water Quantity		
Reducing Peak Flows	NA	NA
Decreasing Downstream Erosion	NA	NA
Groundwater Recharge	7	High
Habitat Suitability		
General	10	High
Invertebrates	8	--
Amphibians	8	--
Anadromous Fish	NA	NA
Resident Fish	NA	NA
Wetland-Associated Birds	5	--
Wetland-Associated Mammals	5	--
Native Plant Richness	6	--
Primary Production and Export	NA	NA

Note:
N/A = Not Applicable
-- = Opportunity Ranking for habitat suitability is only measured for general suitability and not specific animals.

In general Wetland B scores moderate to high for water quality functions due to it being a closed depressional system that holds back water to allow sediments to settle out and emergent plants to remove pollutants such as nutrients, heavy metals and toxic organics. Because Wetland B has no outlet, it was not evaluated for reducing peak flows or decreasing downstream erosion. However Wetland B is considered to function highly for groundwater recharge because there is no surface water outlet and water is only released from the system by groundwater release and evapo-transpiration.

Opportunity ranking for habitat suitability is only measured for general suitability and not specific animals. Wetland B provides a relatively high general habitat function, especially for smaller species such as invertebrate, amphibians and birds because there are relatively large surrounding areas of forested habitat, which provide a large upland buffer necessary for wildlife mobility. Native plant richness provides moderate function and the overall size of the wetland results in a moderate score in functional capacity for mammals, birds, amphibians and other invertebrates.

Buffers

The Jefferson County designated wetland buffer for a Category III wetland with high impact land use and a high habitat function score is 150 feet from the edge of the wetland. The buffer surrounding Wetland B is occupied by a multi-layer second-growth forest with relatively little invasive species. This buffer is undisturbed and serves as a wildlife corridor and also as habitat for numerous bird, mammal, and reptilian species. The 150-foot buffer surrounding Wetland B will be cleared of vegetation to accommodate the proposed water recycling system and driving range.

MITIGATION APPROACH

Current regulatory policies stress the importance of providing mitigation for loss of wetland function resulting from development. Typically, mitigation consists of creating, enhancing and restoring wetland areas either on-site, off-site, in-kind, out-of-kind, wetland banking, or any combination of these. This Mitigation Plan has been prepared to describe the on-site and in-kind compensatory wetland mitigation actions proposed by the applicant.

Mitigation Sequencing

Avoidance

Ecology's publication entitled *Wetland Mitigation Washington State: Agency Policy and Guidance* (2006a) states that "the first step of any project impacting wetlands should be to avoid impacts to wetland and aquatic resources to the maximum extent possible." The 18-hole championship golf course at the MPR has the goal of reducing water consumption by recycling treated water into the golf course irrigation system. To achieve this goal, Statesman plans to construct several stormwater control ponds to supply the on-site water recycling facility. Because of the proposed golf course and topography of Black Point, there is limited area to be developed and Wetland B (Figure 3) will need to be filled with water to create a water recycling and stormwater control pond. Since the goal of the MPR is to limit water consumption by reclaiming golf course and stormwater run-off, there is limited alternative land to create control ponds of the required size; thus, the impact to Wetland B cannot be avoided.

Minimization

Ecology further states that if avoidance of wetland impacts cannot be achieved, then wetland impact minimization should be considered (Ecology, 2006a). Due to the limited land area of the MPR, the impacts to Wetland B could not be minimized through redesigning the project. Instead, Statesman included this feature as a part of the design for the water treatment and recycling system to take advantage of the natural landform. The depressional, kettle landform will need grading to accomplish the planned control pond at that location. In addition, the water collected at this site is part of a plan for reuse in the golf course irrigation system and will result in an overall decrease of water consumption by the MPR.

Compensation

To offset the fill of Wetland B, Statesman is proposing compensatory mitigation in another large kettle south of the Wetland B. Jefferson County replacement ratios, based on Ecology's (2006a) document, were used to identify the amount of wetland creation required, and forms the basis of the preparation of this plan. It is the overall mitigation goal of this project to provide no net loss of wetland functions, values or acreage as a result of development. Mitigation will be on-site and in-kind through wetland creation in Kettle C.

The table below outlines Jefferson Counties and Ecology's replacement ratios recommended for wetland impacts to Category III wetlands. In order to strive to achieve the required replacement ratio, this project proposes to create 0.95 acres (41,400 sf) of forested and scrub-shrub wetland to compensate for 0.475 acres (20,693 sf) of wetland fill, a ratio of 2:1. The wetland creation number was derived by evaluating the mitigation site and potential creation areas.

TABLE 3. JURISDICTIONAL GUIDANCE FOR WETLAND REPLACEMENT RATIOS FROM JEFFERSON COUNTY AND ECOLOGY

Wetland Category	Jefferson County Required Ratio (created:impacted)	Ecology Recommended Ratio (created:impacted)	Statesman MPR Proposed Ratio (created:impacted)
Category III	2:1	2:1	2:1

Acreage impacted and planned for creation based on proposed ratios is listed below.

TABLE 4. PROJECT PROPOSAL WETLAND REPLACEMENT ACREAGE

Wetland Category	Acreage Impacted (square feet)	Acreage Created
Category III	0.475 acres (20,693 square feet)	0.95 acres (41,400 square feet)

BASELINE CONDITIONS OF THE MITIGATION AREA

After reviewing topographic maps for suitable landform features in the Golf Resort area and the proposed MPR golf course layout, we conducted a site visit on April 8, 2008 to identify potential mitigation areas. Seven potential wetland mitigation areas were identified for on-site and in-kind

mitigation. All seven of the potential mitigation areas are located within the boundaries of the Golf Resort. After a review of updated MPR layouts, six of these wetland mitigation areas were removed from consideration due to spatial constraints from geomorphic landforms, available hydrology, golf course fairways, residential dwellings and lack of space for a suitable buffer. The following sections discuss the baseline conditions at the preferred mitigation site. The proposed mitigation site at Kettle C was chosen to closely replicate the impacted wetland, as well as address local regulations. This was found to be the best option to maintain a diversity of habitat at the site.

Description of Mitigation Area

The preferred mitigation option is located in the bottom of Kettle C, similar to the existing Wetland B at the bottom of Kettle B. Kettle C is located approximately 800 feet south of Kettle B in the south central portion of the Golf Resort area and labeled "Wetland Creation" on Figure 3. The bottom of Kettle C is hydrologically isolated and has no wetlands or streams. The walls of the kettle range from 30 to 55 percent slope and are approximately 110 feet tall. There are paved roads surrounding the kettle at the top of the slope and vegetation has been cleared within the past 10 years within the entire kettle. Wetland creation in this area would be on-site and in-kind (depressional and hydrologically isolated).

Historic and Current Land Use

Kettle C is relatively disturbed and has been historically logged with the most recent logging event occurred in the past 10 years. The RV Park historically had campsites and roads surrounding the kettle but the kettle itself was apparently not used for commercial or recreational purposes. There are no man-made structures located in the kettle, but there are sanitary stations associated with the RV park located near the top of the slope. Since this kettle is also located on-site, the zoning and land use are the same as Wetland B. An aerial photo depicting the condition and land use of the area in 2005 is presented in Figure 6. The on-site wetlands and streams are also shown on Figure 6.

Wetland Features

There are no wetlands associated with Kettle C. No wetland indicators (hydrology, hydric soils or hydrophytic vegetation), streams or seeps were observed entering or leaving this proposed mitigation area. Thus, the area identified as Kettle C is located in an upland portion of the site.

Water Regime

Hydrology is the most important component of any wetland creation project. Hydrologic characteristics are the dominant modifiers of wetlands and exert great control over the type of vegetation. Kettle C receives hydrology from direct precipitation and localized runoff from the catchment basin surrounding the kettle depression. There is no direct outlet in this depressional area and there were no signs of inundation or hydric soils in the bottom of the kettle. The high infiltration rate of the soils in this area appear to prevent wetland conditions (i.e. hydric soils and wetland hydrology) from establishing at the bottom of the kettle. This kettle does not lie within a 100-year floodplain.

Soils

The *Soil Survey of Jefferson County* (USDA, 1975) has identified one soil type within Kettle C, Hoodsport – Grove very gravelly sandy loam (HrD), as shown in Figure 5. Hoodsport-Grove very gravelly sandy loam, 0 to 30 percent slopes, is a moderately well drained soil formed from glacier outwash. Permeability is moderately rapid and available water capacity is very low. This soil is not a listed hydric soil for Jefferson County, but the soil does have unnamed hydric inclusions (USDA, 2001). A confining layer was not observed within 16 inches of the surface that would slow water moving through the various soil layers.

Vegetation

The vegetation on the bottom and sides of the kettle is primarily composed of juvenile red alder, Douglas fir, sword fern and miscellaneous grasses. Mature vegetation was apparently removed from logging activities less than ten years ago and the existing vegetation is indicative of upland plant communities. A query of DNR Natural Heritage Features list revealed no presence of rare or sensitive plants on or within the vicinity of Kettle C (DNR, 2010).

Fauna

Kettle C does not have the potential to support a variety of wildlife species such as birds, reptiles, and mammals due to the disturbed forest and shrub layer and the presence of a paved road surrounding the top of the kettle. There is also no aquatic habitat to support amphibians or attract birds. This area is not directly connected to undisturbed portions of habitat on-and off-site; and therefore, fauna are not assumed to utilize this area frequently. During field visits, only a few bird species were observed in this area.

There are no streams or tributaries connected to this mitigation area that could provide habitat for fish species. A review of WDFW PHS maps (WDFW, 2008) showed no presence of critical habitat or sensitive species on or within the vicinity of Kettle C. The report titled *Pleasant Harbor Marina and Golf Resort Fish and Wildlife Habitat Assessment* (GeoEngineers, 2006b) described the fish and wildlife presence and habitat quality on and within the vicinity of the site. This mitigation area will be incorporated into the HMP, which outlines the preservation and creation of wildlife corridors and habitat features that will be featured in the final design of the MPR (GeoEngineers, 2011).

Landscape Position and Geomorphology

Kettle C is approximately 110 feet deep with moderately steep slopes. There is no potential outlet to this kettle. The bottom of this kettle is located at elevation 83 feet mean lower low water (MLLW) and the top of the kettle is located at elevation about 195 feet MLLW. The catchment basin for this area begins at the top of the slope surrounding the kettle. These conditions were confirmed during our site visits.

Buffers

The proposed mitigation buffer area in this kettle is disturbed from logging activities and portions of the outer edge are disturbed from the development of the RV Park. Invasive species are limited, with only a few occurrences of Himalayan blackberry (*Rubus discolor*) and Scot's broom (*Cytisus*

scoparius) in the buffer area. The buffer area is primarily composed of juvenile red alder, Douglas fir, sword fern and miscellaneous grasses.

DESCRIPTION OF MITIGATION SITE PLANS

Wetland Creation

The project goal is to create a wetland mitigation site that meets or exceeds the performance of a Category III scrub-shrub wetland, thus complying with Jefferson County regulations. The preferred area of wetland creation is shown in Figure 7. The following sections describe the concepts of the mitigation plan for creating wetland conditions at Kettle C. The mitigation wetland, after creation, would receive direct precipitation, surface run-off similar to Wetland B and treated stormwater for its source of hydrology. An existing road to the bottom of Kettle C will be used for equipment access. After the wetland creation activities are completed, fencing will be installed around the buffer of the wetland creation area to prevent unauthorized people from entering into the mitigation site.

Water Regime

Wetland hydrology is referred to as all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface for a sufficient duration during the growing season. The growing season is defined as the portion of the year when soil temperatures at 19.7 inches below the soil surface are higher than biological zero (41ºF). The growing season for Jefferson County is from March to November (USDA, 2002). Areas that are seasonally inundated and/or saturated to the surface for a consecutive number of days greater than or equal to 12.5 percent during the growing season are considered to be wetland.

A query was made to gather historical rain data for the area. The nearest weather station located in similar geographic and climatic conditions is Quilcene, Washington, a town approximately 11 miles north of the proposed site. The data for the Quilcene 2W weather station indicates that the station received an average precipitation of 55.24 inches per year, from June 4, 1948 to June 30, 2007 (Western Regional Climate Center, 2007). Average precipitation over a similar time period at nearby weather stations in Chimacum, Washington (approximately 25 miles north of the site) and Shelton (approximately 31 miles south of the site) were 29.45 inches and 66.19 inches, respectively. This shows that precipitation rates generally increase from north to south in the Hood Canal region. Therefore, the MPR likely receives slightly more precipitation than at Quilcene. The amount of precipitation recorded at Quilcene for the region is sufficient to support the hydrology needed to sustain wetland conditions as indicated by the fact that the three on-site wetlands receive only direct precipitation and surface run-off as their sources of hydrology. The preferred mitigation site will receive water from the same source in the MPR.

The preferred mitigation site will be supplied additional hydrology from reclaimed water run-off from the MPR. It will be required that the run-off from the golf course pass through a water treatment system before entering the newly created wetland or existing wetlands. The amount of hydrology entering the created wetlands and existing wetlands will likely be greater than the existing site conditions because of the addition of reclaimed water. Due to the increased hydrology entering the wetlands, the newly created wetland should have soils that remain saturated for a

sufficient duration of the growing season to achieve hydric wetland conditions. Additionally, ponding may occur and provide increased value to the wetlands' function due to a created open-water component.

The groundwater table in Kettle C is too depth to consider excavating in order to create a wetland fed by groundwater. Thus, direct precipitation, surface water runoff and treated stormwater are the best candidates to provide hydrology to this proposed created wetland.

Soils

The soil type present in Kettle C is moderately well-drained and does not favor wetland creation (USDA, 1975); as a result, Kettle C does not contain wetland features due to the relatively high permeability of the soil. Soils rich in silt and clay have a lower permeability and higher water capacity than sandy and gravelly soils. Therefore, the addition of imported soils with fine-grained materials and lower permeability will be necessary to retain sufficient hydrology to create wetland conditions. The confining soil layer will be added to Kettle C after filling and grading have occurred as described below. Due to the poor water retention of the soil layers that will be underneath the confining layer, the silt and clay layer will need to be five feet deep and tightly packed to successfully capture and retain enough water. Hydric soils and hydrophytic plants should become established in the created wetland after enough water is retained.

Hydric soils excavated from Wetland B will be placed in Kettle C to facilitate the creation of wetland conditions. The hydric topsoil from Wetland B will be recovered and placed on the top layer within the wetland creation area in Kettle C. The imported hydric soils will bring additional benefits to the created wetland such as seed sources, roots and rhizomes of wetland species, and may retain micronutrients, mycorrhizae, and other necessary components for plant growth (Ecology, 1993).

Grading Plan/Site Maps

The preferred mitigation site will require significant filling and grading to achieve 41,386 square feet of mitigation for the filling of Wetland B. It was estimated that 13,059 cubic yards of fill and a 5-foot deep confining layer will be necessary to raise the bottom of the kettle from the 83 feet MLLW to 109 feet MLLW as shown in Figure 8. The grading plan prepared by Craig A. Peck and Associates (2011) depicts total cut and fill required for the project. The percent compaction will be identified by the site civil engineer and added to the final mitigation plan.

The bottom of Kettle C will be compacted and shaped to a concave surface allowing for water to pond (no more than 2-feet) to create 41,400 square feet of wetland within the kettle. At the same time as the clearing and grading of Kettle C occurs, hydric soil within Wetland B will be excavated and stockpiled for use in the mitigation area. The soils will be transported to the created wetland and spread out with a minimum depth of 6 inches on top of the confining layer. Top soil from an approved source will be imported as needed to create the minimum 6-inch depth.

Planting/Landscape Plans

One objective of this mitigation plan is to use species native to the area, such as those occurring in Wetlands B, C and D and associated buffers. Planting should occur in the fall of the same year after the excavation/grading activities have been completed. The project biologist can be on-site

during plant installation to ensure that healthy plants are being installed as per the approved mitigation plan.

The created wetland will have an open water component incorporated into the center that will remain throughout the year. The perimeter of the wetland will experience seasonal inundation correlating with the wet season. The bottom of the wetland will not be deeper than 24 inches below the wetland perimeter to allow for seasonal herbaceous plants to grow. Large woody debris will be placed in the open water as well as along the perimeter to create habitat for amphibians.

Plants selection for the created wetlands will be based upon their hydrologic requirements, their ability to improve water quality, and their attributes, such as being able to support wildlife and. Vegetation is a major factor in the distribution of wildlife. Plants provide food, shelter against predators and weather, and areas for nesting, resting, perching and breeding (Leedy and Adams, 1978). Other areas with existing vegetation that are valuable to wildlife will be maintained within the designed buffer. Plants noted to occur in high quality habitats will be selected over plants that form monotypic stands or possess low quality habitat characteristics such as hardhack (*Spiraea douglasii*).

Invasive species at the mitigation site will be removed prior to plant installation. All machinery will be properly cleaned prior to work at the mitigation site to limit fugitive invasive species seeds unintentionally brought onto the site. No soil from Wetland B will be incorporated in the mitigation site if it is noted to contain invasive species. Upon invasive species discovery at the mitigation site during the project, appropriate measures will be taken to permanently remove them.

The preferred mitigation site is disturbed and contains native upland vegetation. The areas with native vegetation within the surrounding buffer of the created wetland will be left unplanted to allow the existing vegetation to continue to grow. Habitat structures and features at the mitigation site will be installed in the form of new wetland plants, open water components and large woody debris placed in various locations in and surrounding the wetland. Once the MPR is complete, human traffic in the mitigation area will be minimal except for MPR personnel and monitoring biologists.

Table 5 outlines the vegetative species proposed for planting within the proposed Kettle C wetland creation area as well as general size and spacing for each species. A detailed planting plan of the mitigation site is presented in Figure 9 and descriptions of the proposed mitigation plantings are found in Appendix D – Plant Descriptions.

TABLE 5. PROPOSED VEGETATION FOR MITIGATION PLANTING

Common Name	Scientific Name	Indicator Status	Vegetation Class	Size	On-Center Spacing (ft)	Number of Plants
Western red cedar	*Thuja plicata*	FAC	Tree	1 gallon	12	27
Red alder	*Alnus rubra*	FAC	Tree	1 gallon	12	27
Pacific willow	*Salix lasiandra*	FACW	Tree	Stakes	3	439
Salmonberry	*Rubus spectabilis*	FAC+	Shrub	1 gallon	6	109

Common Name	Scientific Name	Indicator Status	Vegetation Class	Size	On-Center Spacing (ft)	Number of Plants
Pacific ninebark	*Physocarpus capitatus*	FACW-	Shrub	1 gallon	6	109
Vine maple	*Acer circinatum*	FAC-	Shrub	1 gallon	6	109
Small-fruited bulrush	*Scirpus microcarpus*	OBL	Herb	Plugs	3	439
Slough sedge	*Carex obnupta*	OBL	Herb	Plugs	3	439
Lady fern	*Athyrium felix-femina*	FAC	Herb	Plugs	3	439

Buffers

Buffers will be applied to the newly created wetland to protect and maintain its integrity. Wetland buffers will follow the critical areas JCC Chapter 18.22. The created wetland will require a 150-foot buffer for a Category III wetland because the proposed land use is high intensity and more than 20 habitat functions points were scored. This buffer will be preserved and no disturbance activities will occur in this area. Buffers will be measured perpendicular from wetland boundaries and are to be permanently marked in the field by a fence. The buffer for the created wetland is depicted on Figure 7. Statesman will secure a deed restriction or conservation easement for the wetland mitigation area and the associated buffers.

The area surrounding the Kettle C mitigation site is dominated by a variety of native and non-native upland plants. In order to increase the value of the buffers for the mitigation plan, non-native vegetation, such as Scot's broom and Himalayan blackberry, will be removed to provide native plant species a better chance of thriving. Native plant species will be re-planted if, upon removal of non-native plant species, an area becomes sparsely vegetated.

These preserved buffers will not only protect the new wetland, but will also serve as habitat for smaller animals such as, small songbirds, reptiles, and mammals. These buffers will also help to connect with the golf course wildlife corridors (as described in the Habitat Management Plan [GeoEngineers, 2011]).

Buffer Averaging and Enhancing

In addition to preserving upland vegetation for buffers surrounding the newly created wetland, portions of the buffers surrounding Wetland C and Wetland D will be enhanced as part of this mitigation plan. Buffer averaging for Wetlands C and D is proposed in discrete locations to accommodate topographic restraints of the site. Approximately 22,545 square feet of area will be added to the total wetland buffer area to compensate for a loss of 22,545 square feet of wetland buffer. The buffer addition areas have been placed where natural surface runoff flows before entering the wetland areas, thus enhancing the protective functions of the buffer. Prior to beginning ground disturbing activities, the outer edge of the wetland buffers will be staked. Signs will be posted depicting the proposed wetland buffers for both Wetlands C and D as critical areas

once the enhancement activities are completed. Details of the buffer averaging and enhancement plan are presented in Figure 10 and described in the sections below.

Wetland C

Wetland C is a Category III wetland, requiring an 80-foot buffer. Portions of this wetland buffer currently have gravel and paved roads crossing through native vegetation. Along the sides of these roads and in disturbed portions of the buffer, Himalayan blackberry and Scot's broom are present in thick patches. The impervious surfaces and invasive species will be removed from the buffer and much of this area will be replanted with upland vegetation native to the area.

A portion of the eastern wetland buffer directly adjacent to the golf course fairway will be reduced to accommodate Fairways 2 and 3 of the planned golf course. A total of 4,201 square feet of buffer will be reduced. No buffer will be reduced by more than 25 percent as stipulated by JCC 18.22.330.8. For Wetland C, a buffer reduction of 25 percent would equal 60 feet. The reduced portion of the buffer contains a paved road and large amounts of Scot's broom and Himalayan blackberry to be removed as part of the enhancement plan. The buffer addition area will occur on the northern and southern portions of the wetland and will compensate for the reduction with the addition of 4,201 square feet. The buffer addition areas currently consist of mixed coniferous-deciduous forest of Douglas fir, western red cedar, and red alder. Increasing these areas of forest on the southern side of this wetland will provide more space and assist to better connect the proposed wildlife corridors. Details of the wetland buffer area are shown in Figure 11 and a description of plants proposed for the enhancement portion of this buffer is listed below in Table 6. The project biologist can be on-site during plant installation to ensure that healthy plants are being installed as per the approved mitigation plan.

TABLE 6. PROPOSED VEGETATION FOR WETLAND C BUFFER MITIGATION

Common Name	Scientific Name	Indicator Status	Vegetation Class	Size	On-Center Spacing (ft)	Number of Plants
Big Leaf Maple	*Acer macrophyllum*	FACU	Tree	1 gallon	12	20
Douglas Fir	*Pseudotsuga menziesii*	FACU	Tree	1 gallon	12	20
Evergreen huckleberry	*Vaccinium ovatum*	FACU	Shrub	1 gallon	6	83
Salal	*Gaultheria shallon*	FACU	Shrub	1 gallon	6	83
Sword fern	*Polystichum munitum*	FACU	Emergent	1 gallon	3	332

Wetland D

Wetland D is a Category III wetland requiring a 150-foot buffer. Portions of this wetland buffer have gravel and paved roads crossing through native vegetation. Thick patches of Himalayan blackberry and Scot's broom are present along the sides of these roads and in disturbed portions of the

buffer. The impervious surfaces and invasive species will be removed from the buffer and much of this area will be replanted with upland vegetation native to the area.

The planned Fairway 6 also passes through the western portion of the 150-foot buffer of Wetland D. This portion of the wetland buffer will be reduced by a total of 18,344 square feet. No buffer will be reduced by more than 25 percent as stipulated by JCC 18.22.330.8. For Wetland D, a buffer reduction of 25 percent would equal 112.5 feet. The buffer currently contains paved roads and Himalayan blackberry and Scot's broom, which are proposed to be removed as part of the buffer enhancement plan. The buffer addition area will compensate for this loss with a total of 18,344 square feet of additional wetland buffer. The buffer addition will occur on the northern and southern portion of Wetland D and currently consists of mixed coniferous-deciduous forest of Douglas fir, western red cedar, and red alder. Details of the wetland buffer area are shown in Figure 12 and a description of plants proposed for the enhancement portion of this buffer is listed below in Table 7. The project biologist can be on-site during plant installation to ensure that healthy plants are being installed as per the approved mitigation plan.

TABLE 7. PROPOSED VEGETATION FOR WETLAND D BUFFER MITIGATION

Common Name	Scientific Name	Indicator Status	Vegetation Class	Size	On-Center Spacing (ft)	Number of Plants
Douglas Fir	*Pseudotsuga menziesii*	FACU	Tree	1 gallon	12	13
Red alder	*Alnus rubra*	FAC	Tree	1 gallon	12	13
Evergreen huckleberry	*Vaccinium ovatum*	FACU	Shrub	1 gallon	6	52
Salal	*Gaultheria shallon*	FACU	Shrub	1 gallon	6	52
Sword fern	*Polystichum munitum*	FACU	Emergent	1 gallon	3	208

MITIGATION SITE-SPECIFIC GOALS, OBJECTIVES AND PERFORMANCE STANDARDS

As stated above, this Mitigation Plan strictly covers conditions and plans as they relate to wetland alteration. A HMP with buffer mitigation plans (GeoEngineers, 2011) has been developed for the five streams located within the Maritime Village area of the MPR

Goals

Chances of success are dependent on a thorough evaluation of existing conditions, soils, vegetation, and hydrology of the proposed mitigation site. This mitigation report is focused toward the following goals:

- Provide no-net-loss in wetland acreage and function,
- Provide on-site, in-kind compensatory mitigation,
- Create a total of 0.95 acres (41,400 square feet) of forested, shrub and emergent wetland,

- Maintain or enhance hydrologic patterns similar to current conditions at existing wetlands,
- Provide a natural plant community within the created wetland area that will surpass the diversity and structural complexity currently found at the mitigation site, and
- Perform a wetland delineation of the created wetland area at the end of the monitoring period using the approved wetland delineation manual for that year to verify that 0.95 acres of wetland was created.

Objectives

Specific objectives and standards associated with this wetland mitigation are:

- The creation of 0.95 acres (41,400 square feet) of wetland habitat is planned to compensate for the loss of 0.475 acres (20,693 square feet) of Category III wetlands. The mitigation area will be required to meet all three wetland parameters (vegetation, soil and hydrology) at the end of the monitoring period as defined in the monitoring plan.
- Vegetate the area using native plant species occurring in the project vicinity,
- Vegetate wetland and buffer areas with species that will provide a broad food base for wildlife or that are high in cover value,
- Buffer average along the outer 25 percent of Wetland C and D buffers,
- Enhance Wetlands C and D buffers,
- Importation of clay-rich soils to line the bottom of the wetland creation area,
- Utilize mulch from on-site sources,
- Trees of significant value will be flagged prior to construction by a biologist. Construction of the wetland in the vicinity of the existing trees shall leave an adequate physical buffer so as not to damage the roots or the trees. It is assumed that the width of the buffer surrounding the existing trees will be determined by the drip line and on a case-by-case basis.
- Use Best Management Practices during construction to protect water quality in adjacent wetland areas, and
- Implement a defined monitoring program that will serve as a measure of the mitigation success.

Compensatory Plan

Mitigation efforts are proposed to expand and enhance several features identified by wetland biologists as components of high-quality habitat. These features include:

- High structural diversity, especially emergent, shrub and forested canopy layers for birds,
- Adequate buffers to protect native plants and to provide key components of habitat,
- Undisturbed corridors between rivers, streams, wetland systems, intact upland habitats and other natural areas,
- High diversity or abundance of native plants and animals, and
- Either seasonal or intermittent open water.

Many of the above components are planned for incorporation into this mitigation plan. High structural diversity can be achieved by the proposed planting of three canopy layers. Native plants will be planted and desirable native volunteers will be permitted.

MONITORING PLAN

A specific set of performance standards corresponding to the stated mitigation goals have been established for the MPR. The goals listed in the previous section are implemented below and these standards will be used to judge the results of this project. The success of this mitigation is dependent upon the components specified in this plan.

Post-construction monitoring will occur on an annual basis for a minimum of 5 years and up to 10 years based on the success of the project. The limiting factor for success of the project is the size of the tree canopy aerial coverage. Tree canopies may take up to 10 years to meet performance standards for this project. Ecology and Jefferson County will determine the success of the mitigation project after 5 years and identify if additional years of monitoring will be required before the site reaches performance standards if not successful by year 5. The as-built event will occur following completion of the installation of the vegetative species. This event will document that the created wetland appears to meet the construction plans and document deviations from the plans. Items to be noted will include: plants were installed as specified and that the wetland appears to be receiving hydrology as planned. At this time, the wetland specialist will aid in the production of the "as-built drawings" and these drawings will be included in the as-built report submitted to Ecology and Jefferson County.

The monitoring events will occur at approximately 6-month intervals following the first monitoring event. The primary focus of the annual spring monitoring event will be on hydrologic functions, with the fall monitoring event focusing on vegetative diversity, cover and mortality. A brief monitoring report will be prepared subsequent to each fall monitoring visit summarizing the spring and fall monitoring observations and will be submitted to the appropriate agencies at the end of the year (December 31).

A wetland delineation of the created wetland areas will be performed at the end of the 5- or 10-year monitoring period to verify that 0.95 acres of wetland was created. The approved wetland delineation manual for the year of the final monitoring will be followed. A wetland delineation map will be submitted along with the final monitoring report describing the results of the delineation.

Methods

Producing a photographic log of pre-construction and post-construction environmental conditions will be a primary method of monitoring the success of the mitigation. Observations to be recorded include plant survival and growth rates, hydrologic factors, and wildlife occurrences. Photographs will also be taken at each monitoring event at each monitoring station to document the evolution of the mitigation site over the monitoring period. Photographs will be taken in all four cardinal directions, from the same point, height, and focused in the same direction.

- Permanent monitoring stations will be established in the wetland creation and wetland buffer mitigation areas. The same standards described below for the wetland creation area will be implemented in the wetland buffer enhancement areas. Each monitoring station will consist of

a circle with an 11.8-foot radius (0.01 acres) with a reinforcing bar (i.e. metal t-post) embedded in the center. Selection of monitoring stations will be spaced out in the mitigation areas to accurately depict different plant species communities and habitat features.

- At each monitoring station the survival rate of installed species will be identified by counting both dead and live plants of each species within the station. Each species will be recorded separately along with the corresponding survival rate. Also, the general health observations (i.e. new growth, signs of stress or disease) for each species of plants will be noted.
- Monitoring of aerial coverage of the vegetation within the mitigation areas will be accomplished by estimating the percentage of the ground covered within the monitoring station, by planted and volunteer species. Estimating aerial coverage of each strata (i.e. tree, shrub and herbaceous) will occur during the as-built monitoring event and also during each monitoring event thereafter. Desirable native volunteer species will be identified and documented; and undesirable invasive species such as reed canarygrass (*Phalaris arundinacea,* FACW), Himalayan blackberry (*Rubus armeniacus*, FACU), cutleaf blackberry *(Rubus laciniatus,* FACU+*)* and Scot's broom (*Cytisus scoparius,* UPL) will be identified, and their percentage of aerial coverage will be estimated and compared to performance standards listed below. Upon completion of this documentation, the undesirable species will be removed.
- Hydrology and presence of hydric soil will be verified within the wetland creation area by tracking soil saturation or ponding water within the created wetland areas during both the spring and fall monitoring events. Thriving obligate plant species will be documented as partial indicators of a successful hydrologic regime. We will also look for hydrology within 12 inches of the ground surface for at least 12.5 percent of the growing season each year.
- Wildlife recordings are to be made as general notes by the monitoring biologist during the monitoring events. Observations may include sighting of individual species, nests, burrows, droppings, or other indicators. The results will be recorded, including date and time of day, and included in the report for the monitoring event.
- Maintenance requirements such as trash removal and vandalism repair will also be noted. These observations, along with mitigation site photographs and a brief report will be submitted to Jefferson County and Ecology after the annual monitoring event is completed.
- It is understood that in order for monitoring to occur, the biologist will be required to cross the existing wetland and associated buffer in order to enter the mitigation area. Access will be restricted to authorized personnel, who will be aware of the sensitivity of the existing and created wetland. The landscape contractor will also be made aware of this, and should be careful not to disturb desirable vegetation when removing non-native species. In both instances, trained professionals who will be able to determine a path of minimal disturbance to the existing wetland should be hired.

Performance Standards

- Invasive, exotic and undesirable species shall be represented by less than 10 percent coverage in the created wetland area and buffer enhancement areas throughout the monitoring period as determined by observations made within the monitoring areas.
- There shall be a minimum of 80 percent survival of all planted materials throughout the monitoring period. Species, quantities, general conditions and sizes of enhancement plants will be described and recorded.

- The soils will be saturated within 12 inches of the surface, or standing water will be present for a consecutive number of days greater than or equal to 12.5 percent of the growing season. Positive indicators of wetland hydrology can be used to identify if this measurement has been achieved.
- Acceptable cover standards for the wetland trees and shrubs:
    - end of year 1: minimum of 20 percent
    - end of year 3: minimum of 30 percent
    - end of year 5: minimum of 40 percent
- Acceptable cover standards for the wetland herbaceous species will be at least 80 percent.

SITE PROTECTION

Statesman will protect this mitigation site from disturbance including logging, mining, development, and selling of the mitigation areas by putting the land in a conservation easement.

MAINTENANCE

Maintenance of the wetland creation areas will be conducted throughout the monitoring years and will be the responsibility of Statesman to ensure completion. Maintenance during the first two years will include periodic watering (irrigation) and control of undesirable species. Maintenance during the subsequent years will be focused on invasive plant removal. Also, if crowding of newly planted vegetation by grass species is determined to affect plant survival during the monitoring events, the maintenance company will return to trim grasses from around the drip lines of the planted vegetation.

Irrigation of the wetland creation area may be required for the first 2 years after installation of native plants. A temporary irrigation system may be utilized or a regular watering schedule established if on-site water is not available. Watering during the plant establishment period is crucial for plant survival. During the dry months, usually June through September, it may be necessary to add up to 3 gallons of water per plant per week. Extremely warm weeks may necessitate watering on a more frequent basis. An irregular watering interval will encourage the development of deep root systems, which in time will reduce the need for any future watering.

Control of undesirable species will be maintained by periodic invasive species removal from the mitigation area. Species to be removed primarily include exotic invasive species such as: reed canarygrass, Himalayan blackberry, cutleaf blackberry and Scot's broom. Only desirable native volunteer species in addition to those planned for the area will be encouraged to grow. Wetland buffer slopes will be reseeded with grasses if deemed necessary due to erosion or sedimentation into the newly created wetland areas. Some of the other maintenance responsibilities such as trash removal and vandalism repair will be performed on an as-needed basis.

CONTINGENCY PLAN

If the project fails to meet the standards discussed above, implementation of a contingency plan will be required by Ecology and Jefferson County. The contingency plan will supplement the wetland mitigation plan and will be based on assessments made during mitigation monitoring events and additional site visits. As problems are recorded, suggestions and possible solutions will be forwarded to Ecology and Jefferson County as a component of the monitoring reports. GeoEngineers will work in conjunction with Ecology and Jefferson County to develop the contingency plan. The plan will anticipate problems and specifically address issues such as the eradication of invasive species, supplemental irrigation as required, replacement plant installation of deceased plants, damaged or missing structures or vandalism. The plan will follow the protocol set forth in this Mitigation Plan and also provide greater detail about specific measures required to help the site meet its goals, objectives and performance standards.

If more than 20 percent mortality of plantings occurs within any of the monitoring years, the problem areas will be replanted, preferably in the dormant season and with improved maintenance to ensure higher plant survival. If, in the judgment of the monitoring biologist, alternative plant species are needed to improve survival, alternative species will be selected.

IMPLEMENTATION SCHEDULE

Statesman will follow the timeline approved and agreed upon by the regulatory agencies in regards to the development of the MPR and the construction of the mitigation areas. The anticipated timeline for this project is shown below in Table 8. The monitoring reports need to be submitted to Jefferson County no later than December 31 in each of the monitoring years. The actual year the first monitoring report will be completed will depend on when the as-built report is completed.

TABLE 8. PROPOSED PROJECT TIMELINE

Activity	Date Started	Date Completed
Final Mitigation Plan	--	2012
Clear Mitigation Wetland Creation Areas	TBD	TBD
Excavate/Grade Mitigation Wetland Creation Areas	TBD	TBD
Plant Mitigation Wetland Creation Areas	TBD	TBD
Enhance Wetland Creation Buffer Areas	TBD	TBD
As-built Report	--	TBD
1st Year Monitoring Report	--	December 31, XX
2nd Year Monitoring Report	--	December 31, XX
3rd Year Monitoring Report	--	December 31, XX
4th Year Monitoring Report	--	December 31, XX
5th Year Monitoring Report	--	December 31, XX

LIMITATIONS

GeoEngineers has completed this Wetland and Wetland Buffer Mitigation Plan Report for the Pleasant Harbor Master Planned Resort in general accordance with the scope and limitations of our proposal. Within the limitations of scope, schedule and budget, our services have been executed in accordance with the generally accepted practices for Mitigation Plan in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

This report has been prepared for the exclusive use of the Statesman Group, their authorized agents and regulatory agencies following the described methods and information available at the time of the work. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. The information contained herein should not be applied for any purpose or project except the one originally contemplated.

The applicant is advised to contact all appropriate regulatory agencies (local, state, and federal) prior to design or construction of any development to obtain necessary permits and approvals. Wetland boundaries, classifications and discussions are based on our understanding of the local, state, and federal regulations, and site conditions at the time of our work. The final wetland boundary determinations and wetland classification is to be made or verified by the appropriate jurisdictional agency.

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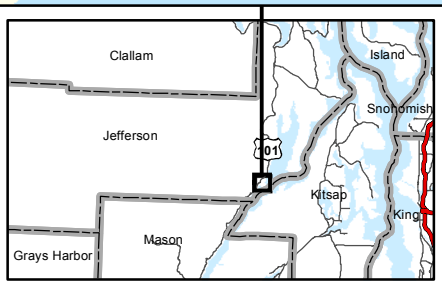

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Feet

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
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Data Sources: ESRI street maps and data 2007.
County boundaries, cities, and waterbodies from Department of Ecology.

Coordinate System: Washington State Plane North, North American Datum 1983 (feet)

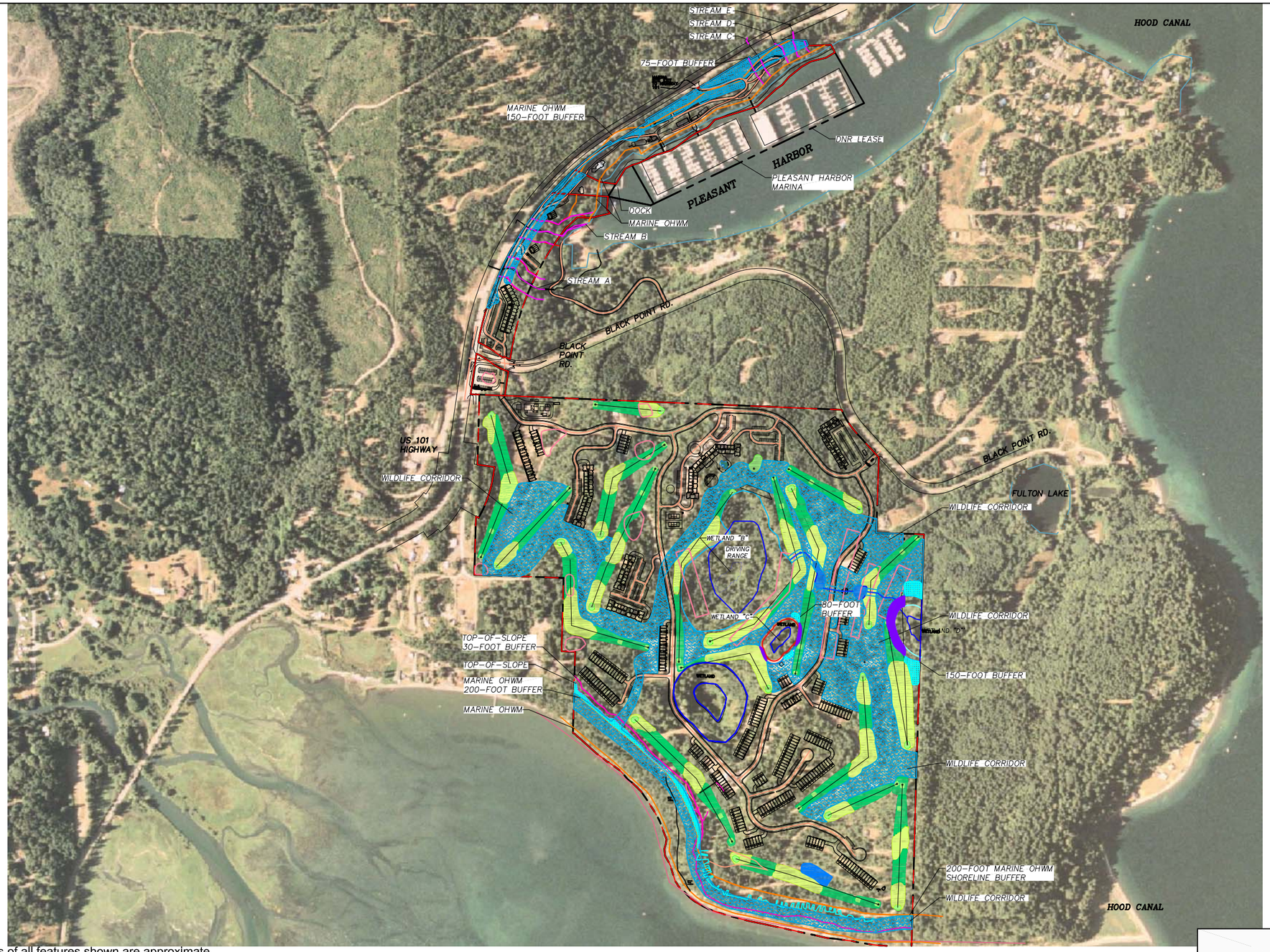
Vicinity Map

Pleasant Harbor Master Planned Resort
Brinnon, Washington

GeoEngineers

Figure 1

Office: TACO Path: P:\12\12677001\GIS\1267700108_Figure1_VicinityMap.mxd Map Revised: May 4, 2011 AMM:SCY



Legal Description:
Section 15 and the North Half of Section 22, Township 25 North and Range 2 West of the Willamette Meridian.

Notes:
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3. Lidar contours are 20 foot intervals.

Reference: Drawing provided by WH Pacific Statesman and Craig A. Peck and Associates.
Lidar Data Sources: Imagery and LiDAR data obtained from Puget Sound Regional Council. LiDAR data interpolated to DEM with 1 meter GSD. Coordinate System is UTM Zone10 North projected to Horizontal Datum NAD83; Vertical Datum is NAVD88.

Legend

- Wetland
- Wetland Buffer
- OHWM
- OHWM Buffer
- Top-of-Slope
- Top-of-Slope Buffer
- Property Boundary
- Wildlife Corridor
- Fairways
- Infiltration areas

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Site Map

Pleasant Harbor Master Planned Resort
Brinnon, Washington

GeoEngineers

Figure 2

TACO:JLD : SCY

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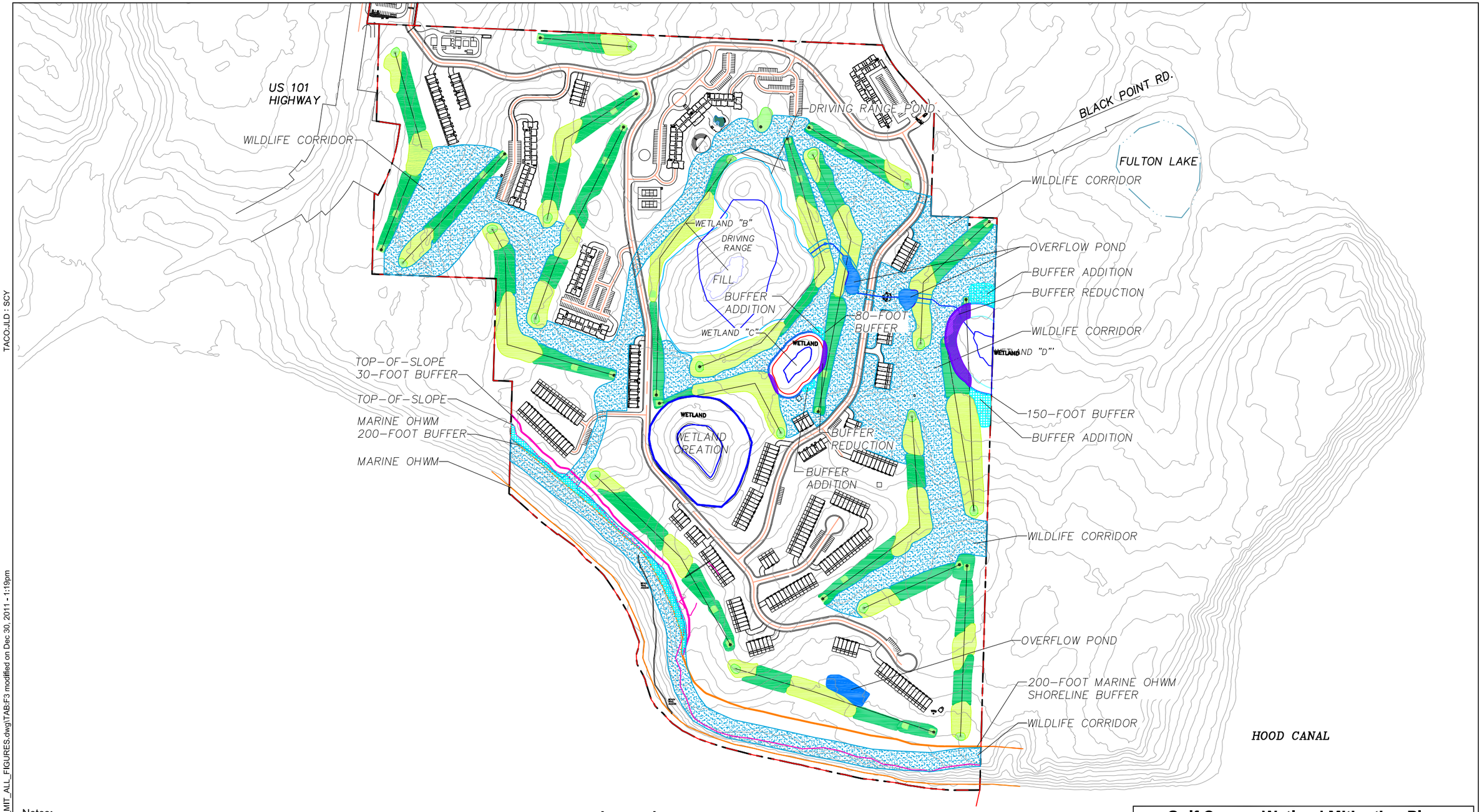

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. Lidar contours are 20 foot intervals.

Reference: Drawing provided by WH Pacific Statesman and Craig A. Peck and Associates.
Lidar Data Sources: Imagery and LiDAR data obtained from Puget Sound Regional Council. LiDAR data interpolated to DEM with 1 meter GSD. Coordinate System is UTM Zone10 North projected to Horizontal Datum NAD83; Vertical Datum is NAVD88.

Legend

- Wetland
- Wetland Buffer
- OHWM
- OHWM Buffer
- Top-of-Slope
- Top-of-Slope Buffer
- Property Boundary
- Wildlife Corridor

Wetland C Buffer Reduction: 4,323 sq. ft.
Wetland D Buffer Reduction: 26,821 sq. ft.
Wetland C Buffer Addition: 4,323 sq. ft.
Wetland D Buffer Addition: 26,821 sq. ft.

N W E S

500 0 500
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Golf Course Wetland Mitigation Plan and Wildlife Corridor Map

Pleasant Harbor Master Planned Resort
Brinnon, Washington

GeoEngineers

Figure 3

TACO:JLD : SCY

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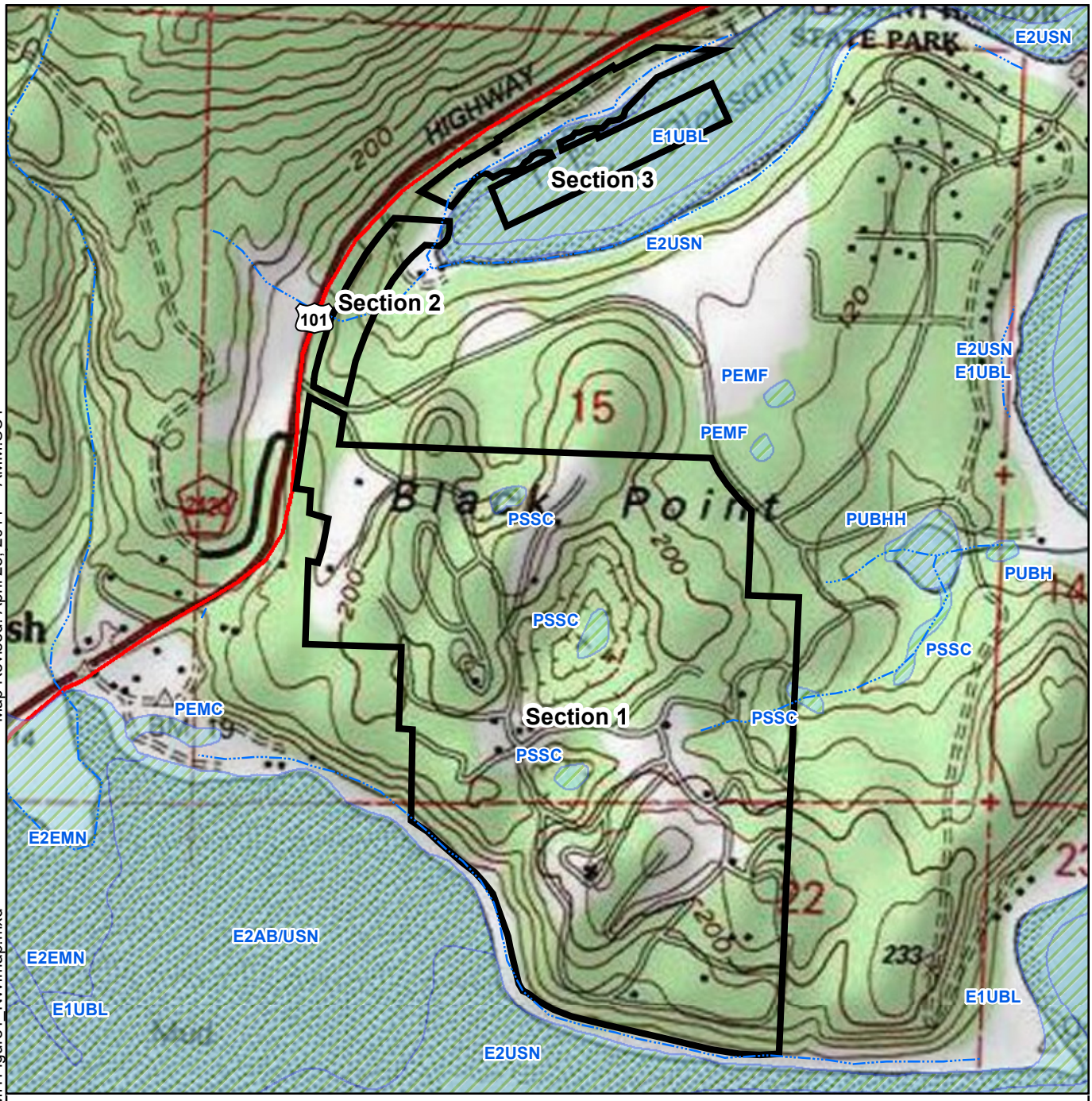

Site

Streams

National Wetlands Inventory Data

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Notes:
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Data Sources: NGS Topo (ArcGIS 2005), NWI data (WDFW 2007), roads and streams (ESRI 2007)

Lambert Conformal Conic, Washington State Plane North, North American Datum 1983

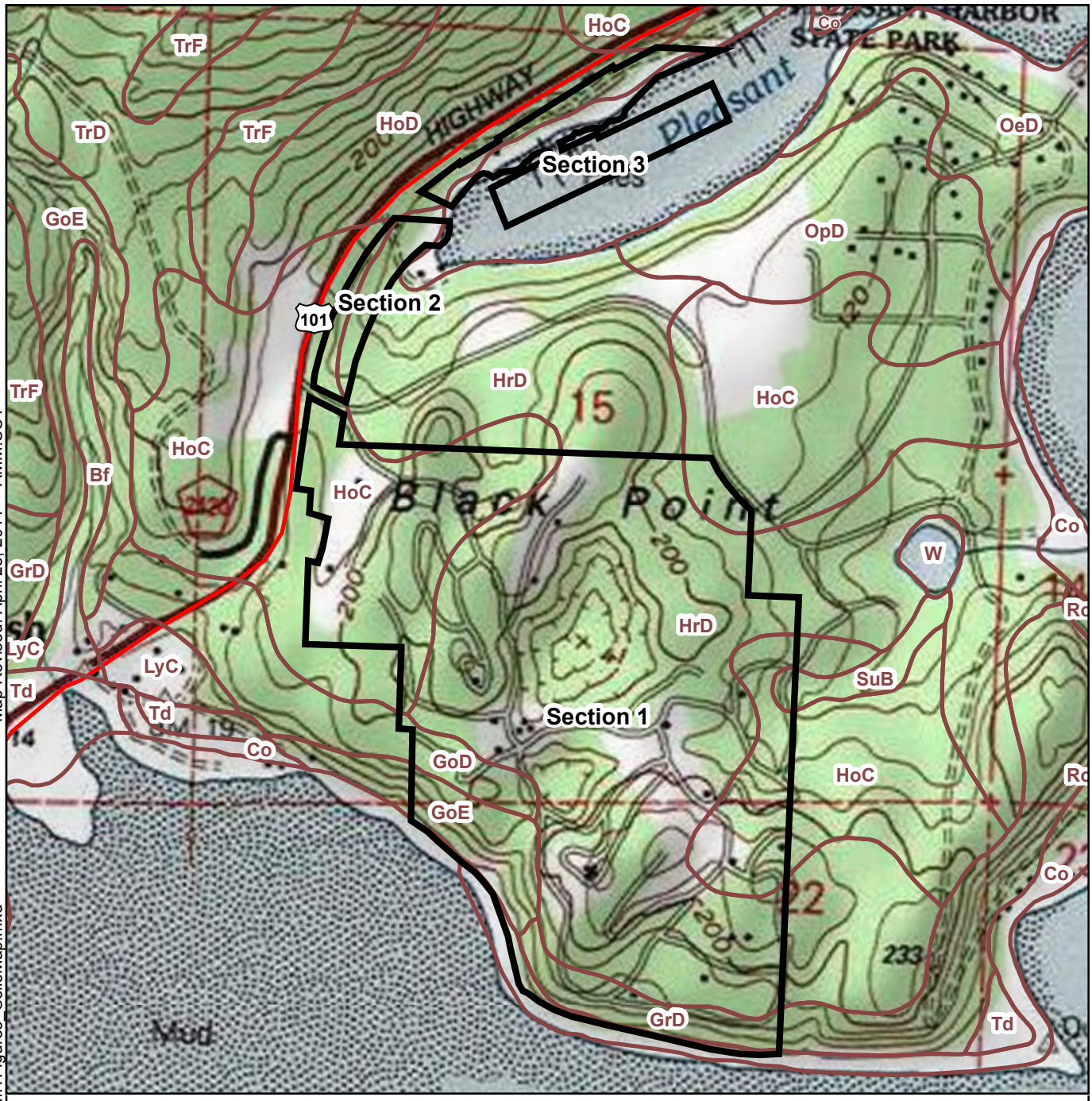
National Wetlands Inventory Map

Pleasant Harbor Master Planned Resort
Brinnon, Washington

GeoEngineers

Figure 4

Office: TACO Path: P:\12\12677001\GIS\1267700108_MITFigure4_NWImap.mxd Map Revised: April 28, 2011 AMM:SCY



Site

Soils Data

This site is located in Sections 15 and 22 of Township 25 North, Range 2 West, Jefferson County, Brinnon, Washington

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GoE - Grove very Gravelly loamy sand, 30-50% slopes
HrD - Hoodsport-Grove very gravelly sandy loam, 0-30% slopes
HoC - Hoodsport very gravelly sandy loam, 0-15% slopes
GoD - Grove very gravelly loamy sand, 15-30% slopes

Notes:
1. The locations of all features shown are approximate.
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3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: NGS Topo (ArcGIS 2005), NWI data (WDFW 2007), roads and streams (ESRI 2007)

Lambert Conformal Conic, Washington State Plane North, North American Datum 1983

Soils Survey Map

Pleasant Harbor Master Planned Resort
Brinnon, Washington

GeoEngineers

Figure 5

Office: TACO Path: P:\12\12677001\GIS\1267700108_MITFigure5_SoilsMap.mxd Map Revised: April 28, 2011 AMM:SCY

Site
Delineated Streams
75-ft Stream Buffer
Delineated Wetlands
80-ft Wetland Buffer
150-ft Wetland Buffer

N
W
E
S

1,000 0 1,000
Feet

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Data Sources: 2005 Aerial Imagery from ESRI Prime World 2D.

Lambert Conformal Conic, Washington State Plane North, North American Datum 1983

Wetland and Stream Map

Pleasant Harbor Master Planned Resort
Brinnon, Washington

GeoEngineers

Figure 6

Office: TACO Path: P:\12\12677001\GIS\1267700108_MITFigure6_WetlandStreamMap.mxd Map Revised: April 28, 2011 AMM:SCY

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3. Lidar contours are 20 foot intervals.

Reference: Drawing provided by WH Pacific Statesman and Craig A. Peck and Associates.
Lidar Data Sources: Imagery and LiDAR data obtained from Puget Sound Regional Council. LiDAR data interpolated to DEM with 1 meter GSD. Coordinate System is UTM Zone10 North projected to Horizontal Datum NAD83; Vertical Datum is NAVD88.

Legend

- Wetland Mitigation Area
- Wetland
- Wetland Buffer
- OHWM
- OHWM Buffer
- Top-of-Slope
- Top-of-Slope Buffer
- Property Boundary

Wetland C Buffer Reduction: 4,323 sq. ft.
Wetland D Buffer Reduction: 26,821 sq. ft.

Wetland C Buffer Addition: 4,323 sq. ft.
Wetland D Buffer Addition: 26,821 sq. ft.

N W E S

500 0 500
Feet

Golf Course Wetland Mitigation Map

Pleasant Harbor Master Planned Resort
Brinnon, Washington

GeoEngineers

Figure 7

TACO;JLD : SCY

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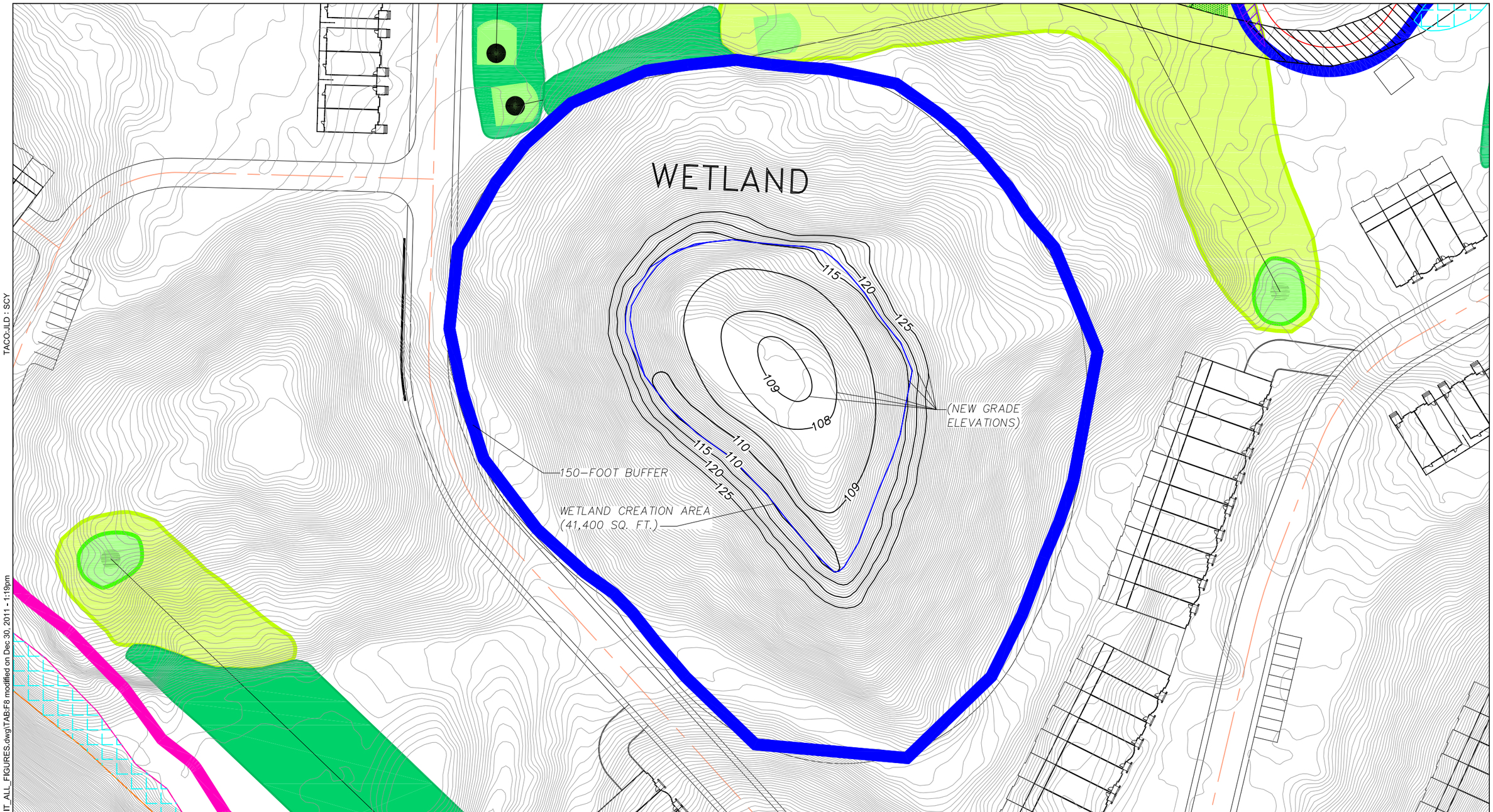

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Lidar Data Sources: Imagery and LiDAR data obtained from Puget Sound Regional Council. LiDAR data interpolated to DEM with 1 meter GSD. Coordinate System is UTM Zone10 North projected to Horizontal Datum NAD83; Vertical Datum is NAVD88.

Legend
- Wetland
- Wetland Buffer
- Top-of-Slope
- Top-of-Slope Buffer

N
W E
S

80 0 80
Feet

Kettle C Wetland Mitigation Grading Map

Pleasant Harbor Master Planned Resort
Brinnon, Washington

GeoEngineers

Figure 8

TACO;JLD : SCY

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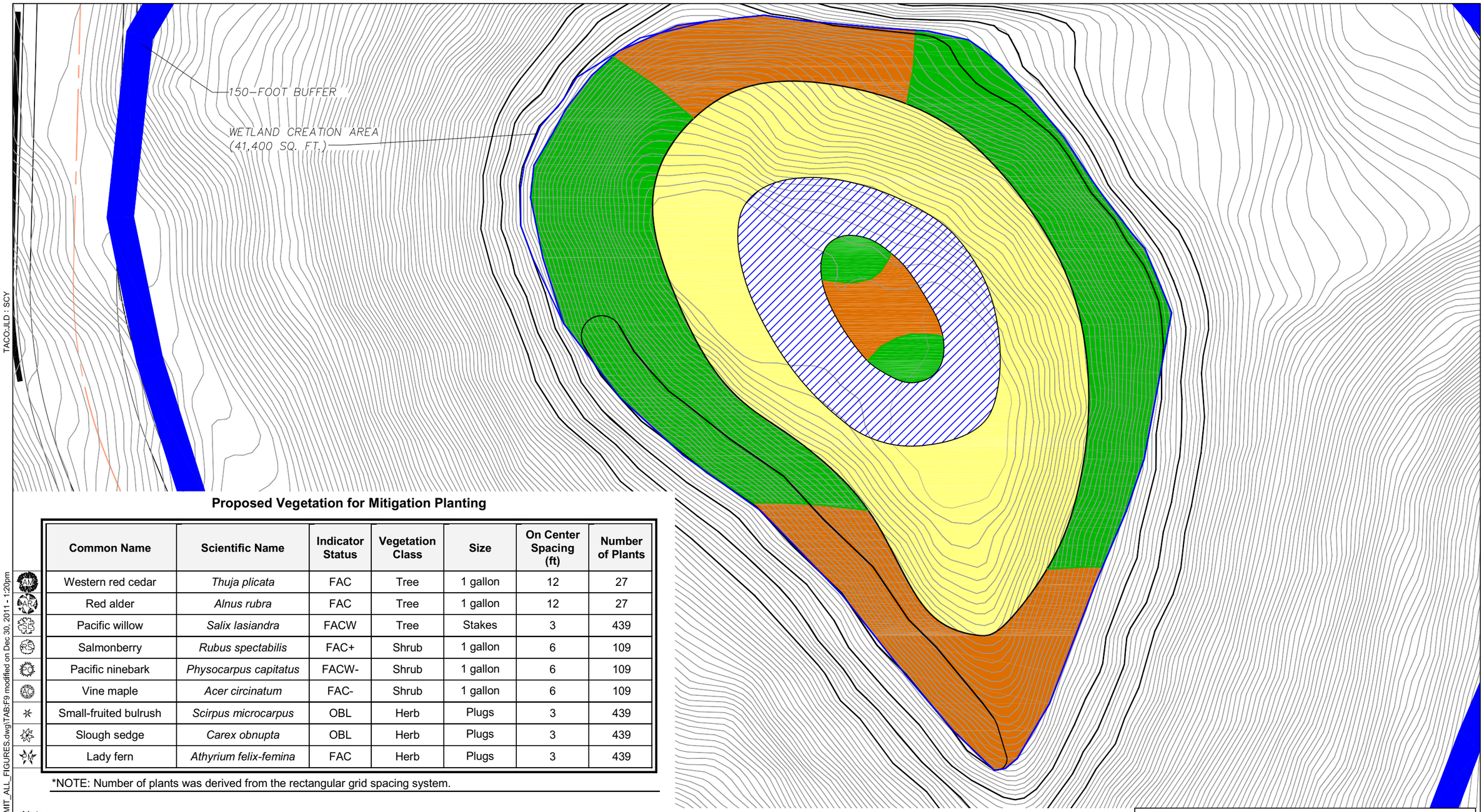

Proposed Vegetation for Mitigation Planting

	Common Name	Scientific Name	Indicator Status	Vegetation Class	Size	On Center Spacing (ft)	Number of Plants
AM	Western red cedar	*Thuja plicata*	FAC	Tree	1 gallon	12	27
AR	Red alder	*Alnus rubra*	FAC	Tree	1 gallon	12	27
SS	Pacific willow	*Salix lasiandra*	FACW	Tree	Stakes	3	439
RS	Salmonberry	*Rubus spectabilis*	FAC+	Shrub	1 gallon	6	109
PN	Pacific ninebark	*Physocarpus capitatus*	FACW-	Shrub	1 gallon	6	109
AC	Vine maple	*Acer circinatum*	FAC-	Shrub	1 gallon	6	109
	Small-fruited bulrush	*Scirpus microcarpus*	OBL	Herb	Plugs	3	439
	Slough sedge	*Carex obnupta*	OBL	Herb	Plugs	3	439
LF	Lady fern	*Athyrium felix-femina*	FAC	Herb	Plugs	3	439

*NOTE: Number of plants was derived from the rectangular grid spacing system.

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Lidar Data Sources: Imagery and LiDAR data obtained from Puget Sound Regional Council. LiDAR data interpolated to DEM with 1 meter GSD. Coordinate System is UTM Zone10 North projected to Horizontal Datum NAD83; Vertical Datum is NAVD88.

Legend
- Wetland
- Wetland Buffer

- Western Red Cedar, Pacific Nine Bark, Lady Fern
- Red Alder, Salmonberry, Vine Maple
- Pacific Willow
- Open Water

N W E S

35 0 35
Feet

Kettle C Wetland Mitigation Planting Plan

Pleasant Harbor Master Planned Resort
Brinnon, Washington

GeoEngineers

Figure 9

TACO;JLD : SCY

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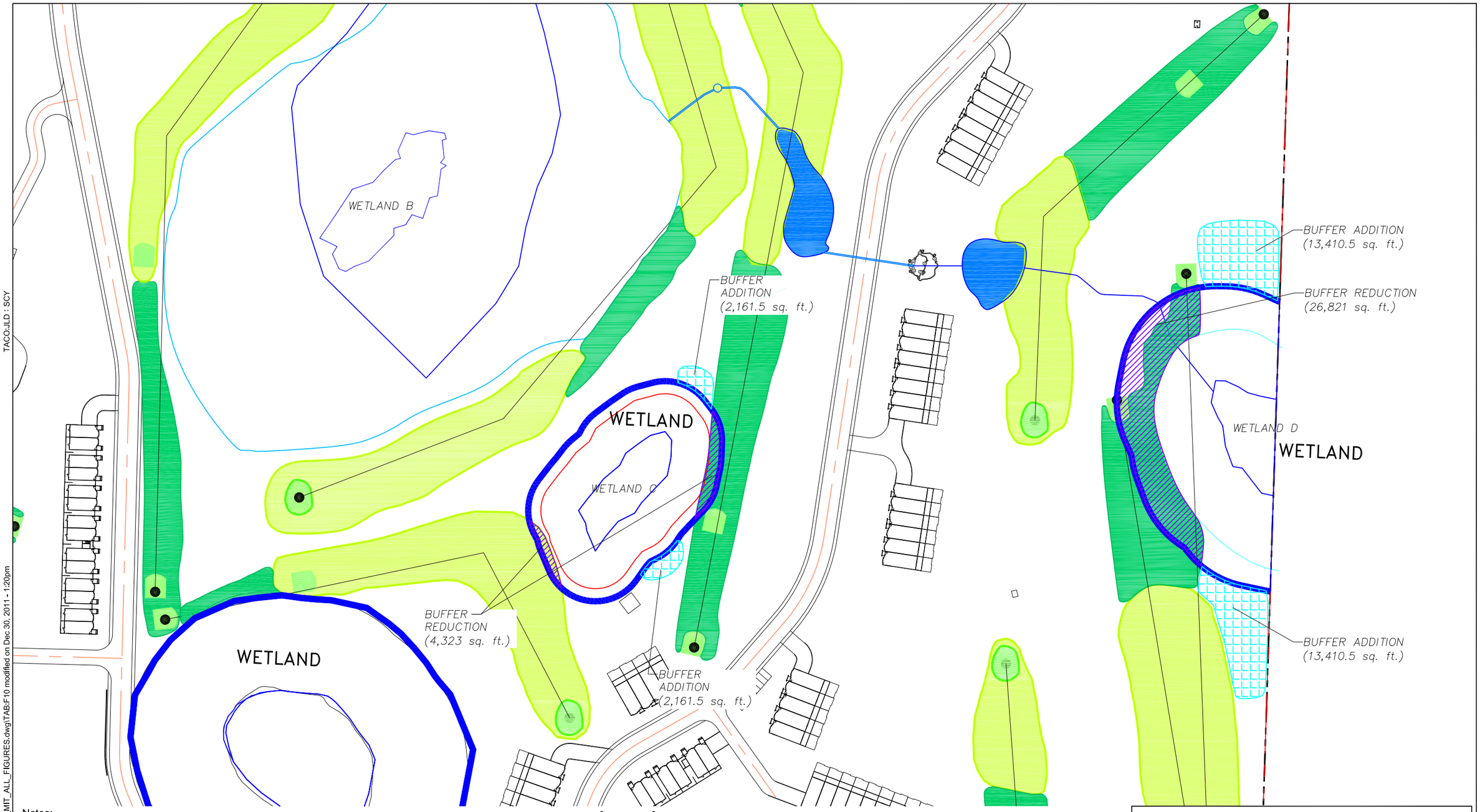

Notes:
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3. Lidar contours are 20 foot intervals.

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Lidar Data Sources: Imagery and LiDAR data obtained from Puget Sound Regional Council. LiDAR data interpolated to DEM with 1 meter GSD. Coordinate System is UTM Zone10 North projected to Horizontal Datum NAD83; Vertical Datum is NAVD88.

Legend

Wetland C Buffer Reduction: 4,323 sq. ft.
Wetland D Buffer Reduction: 26,821 sq. ft.

Wetland C Buffer Addition: 4,323 sq. ft.
Wetland D Buffer Addition: 26,821 sq. ft.

Buffer Averaging Plan

Pleasant Harbor Master Planned Resort
Brinnon, Washington

GeoEngineers

Figure 10

TACO:JLD : SCY

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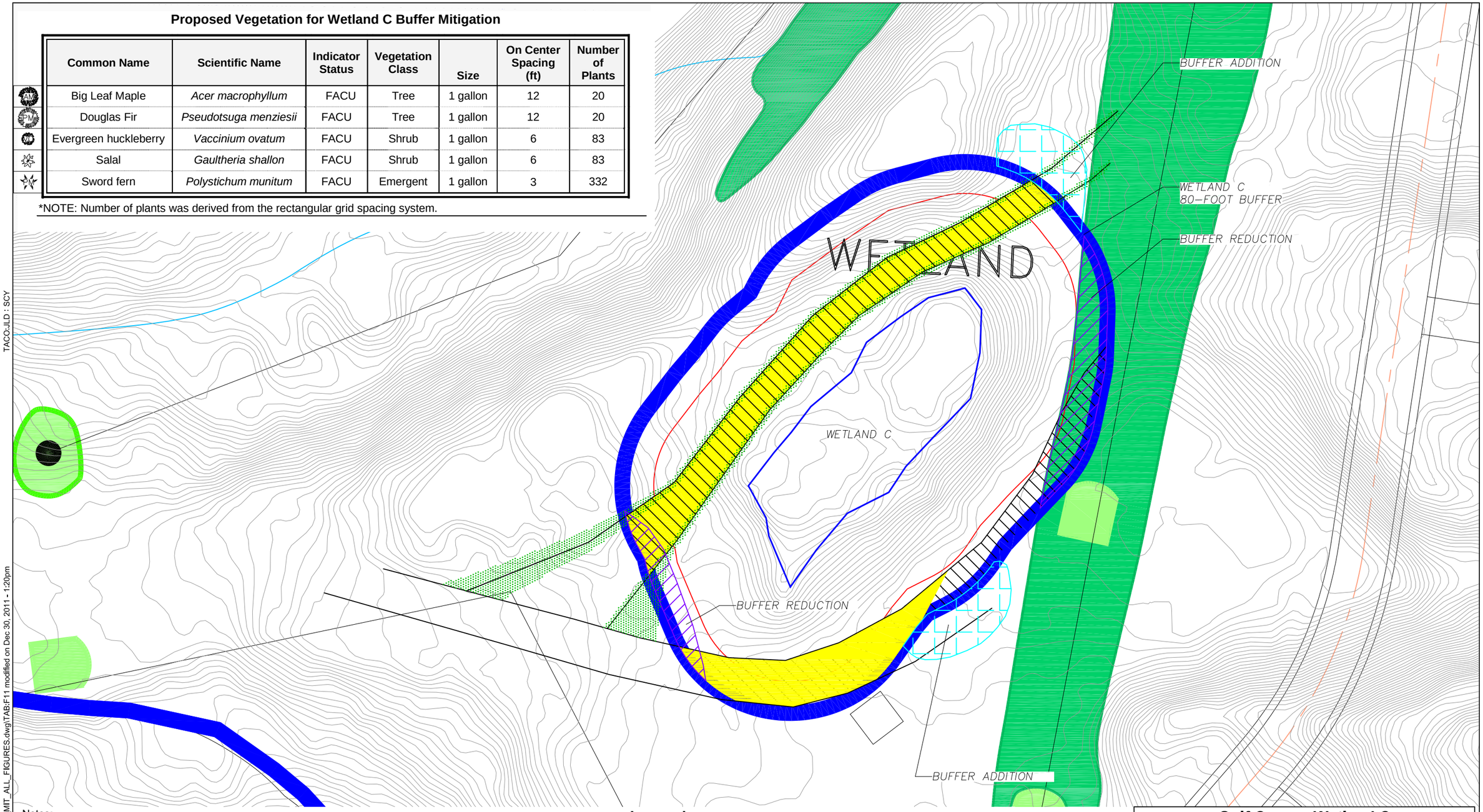
Proposed Vegetation for Wetland C Buffer Mitigation

	Common Name	Scientific Name	Indicator Status	Vegetation Class	Size	On Center Spacing (ft)	Number of Plants
AM	Big Leaf Maple	*Acer macrophyllum*	FACU	Tree	1 gallon	12	20
PM	Douglas Fir	*Pseudotsuga menziesii*	FACU	Tree	1 gallon	12	20
	Evergreen huckleberry	*Vaccinium ovatum*	FACU	Shrub	1 gallon	6	83
	Salal	*Gaultheria shallon*	FACU	Shrub	1 gallon	6	83
	Sword fern	*Polystichum munitum*	FACU	Emergent	1 gallon	3	332

*NOTE: Number of plants was derived from the rectangular grid spacing system.



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Lidar Data Sources: Imagery and LiDAR data obtained from Puget Sound Regional Council. LiDAR data interpolated to DEM with 1 meter GSD. Coordinate System is UTM Zone10 North projected to Horizontal Datum NAD83; Vertical Datum is NAVD88.

Legend
- Wetland
- Wetland Buffer
- Invasive Species - 6,905 sq. ft.
- Asphalt/Gravel Road - 14,947 sq. ft.
- Planting Area - 14,947 sq. ft.
- Buffer Reduction: 4,323 sq. ft.
- Buffer Addition: 4,323 sq. ft.

N W E S

60 0 60
Feet

Golf Course Wetland C
Buffer Planting Plan

Pleasant Harbor Master Planned Resort
Brinnon, Washington

GeoEngineers

Figure 11

TACOMA : SCY
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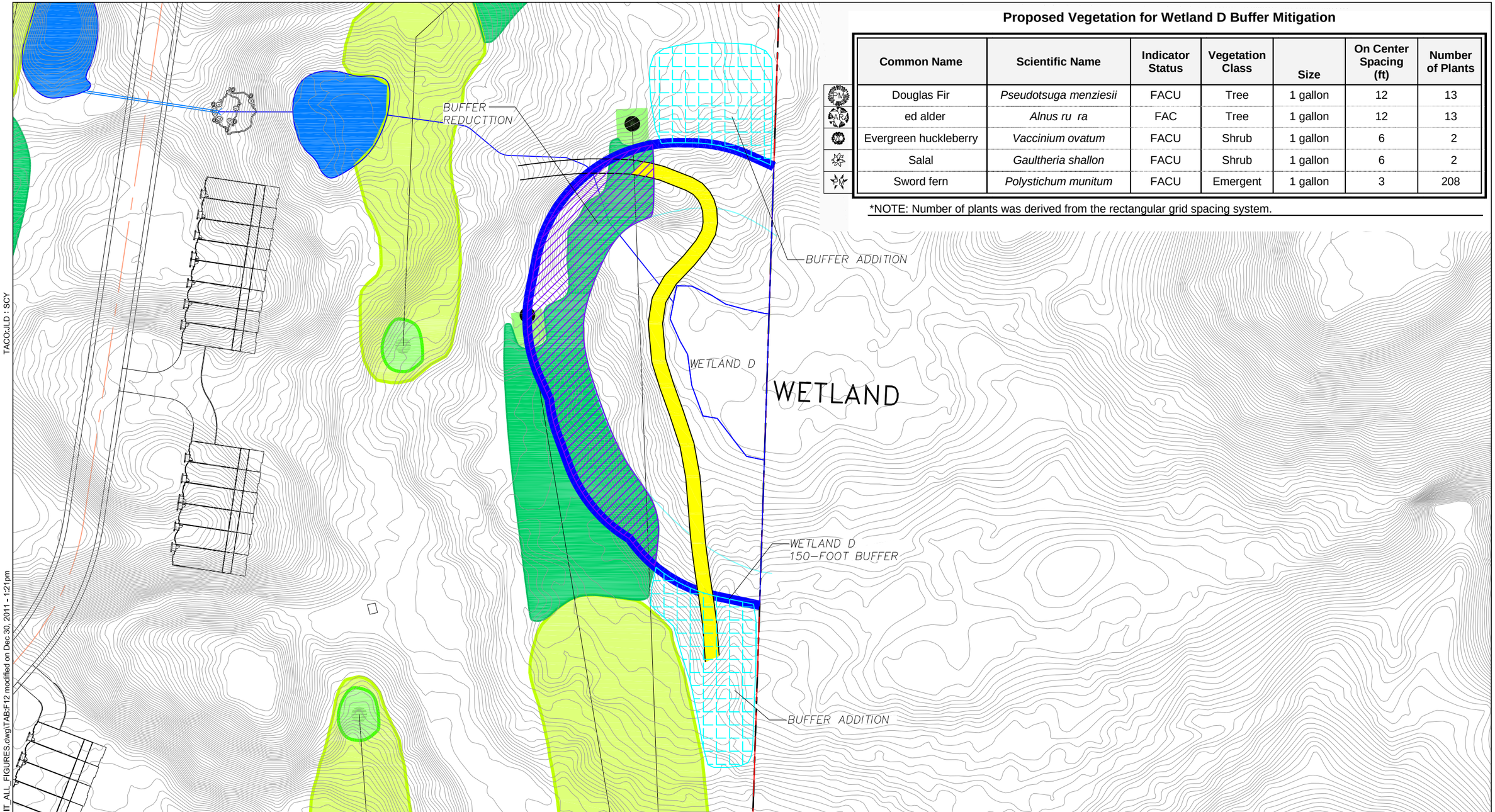
Proposed Vegetation for Wetland D Buffer Mitigation

Common Name	Scientific Name	Indicator Status	Vegetation Class	Size	On Center Spacing (ft)	Number of Plants
Douglas Fir	*Pseudotsuga menziesii*	FACU	Tree	1 gallon	12	13
ed alder	*Alnus ru ra*	FAC	Tree	1 gallon	12	13
Evergreen huckleberry	*Vaccinium ovatum*	FACU	Shrub	1 gallon	6	2
Salal	*Gaultheria shallon*	FACU	Shrub	1 gallon	6	2
Sword fern	*Polystichum munitum*	FACU	Emergent	1 gallon	3	208

*NOTE: Number of plants was derived from the rectangular grid spacing system.



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Reference: Drawing provided by WH Pacific Statesman and Craig A. Peck and Associates.
Lidar Data Sources: Imagery and LiDAR data obtained from Puget Sound Regional Council. LiDAR data interpolated to DEM with 1 meter GSD. Coordinate System is UTM Zone10 North projected to Horizontal Datum NAD83; Vertical Datum is NAVD88.

Legend
- Wetland
- Wetland Buffer
- Planting Area - 8,828 sq. ft.
- Buffer Reduction: 26,821 sq. ft.
- Buffer Addition: 26,821 sq. ft.

N W E S

100 0 100
Feet

Golf Course Wetland D
Buffer Planting Plan

Pleasant Harbor Master Planned Resort
Brinnon, Washington

GeoEngineers

Figure 12

TACO:JLD : SCY

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APPENDIX A
USACE Jurisdictional Determination Letter

12677-001-03

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF

Regulatory Branch

MAR 27 2007

Wayne Wright
GeoEngineers
1550 Woodridge
Port Orchard, Washington 98366

Reference: NWS-2006-1210-SO
Statesman Corporation

Dear Mr. Wright,

This letter concerns your request for confirmation of a wetland delineation and determination of no jurisdiction for property located in an existing campground on the Olympic Peninsula adjacent to Hood Canal near Brinnon, Jefferson County, Washington. After reviewing your submitted information and visiting the site we have determined that wetlands "b", "c" and "d" shown on the enclosed map are not waters of the United States. As such, the work that would occur within these wetlands marked on the enclosed drawing does not require Department of the Army authorization under Section 404 of the Clean Water Act. This approved jurisdictional determination is valid for a period of 5 years from the date of this letter unless new information warrants revisions of the determination.

Other state and local regulations may still apply to these wetlands. For example, the Washington State Department of Ecology (Ecology) regulates isolated wetlands. You should contact Ecology's Office of Regulatory Assistance's One-Stop Service Center at (800) 917-0043 or ecypac@ecy.wa.gov for more information on how to obtain State approval for your project. We are sending a copy of this letter to Ecology and to the Environmental Protection Agency's Aquatic Resources Unit.

A copy of this letter with enclosures will be sent to the Washington Department of Ecology, Office of Regulatory Assistance's One-Stop Service Center and GeoEngineers. If you have any questions about this letter or any aspect of our regulatory program, please contact me at (206) 764-5529 or via email marcy.r.reed@usace.army.mil.

Sincerely,

Marcy Reed

Marcy Reed
Senior Scientist, South Section

Enclosures

cc with drawings and JD form:
Washington Department of Ecology
Environmental Protection Agency

JURISDICTIONAL DETERMINATION Revised 8/13/04
U.S. Army Corps of Engineers

DISTRICT OFFICE: Seattle
FILE NUMBER: NWS-2007-1210-SO

PROJECT LOCATION INFORMATION:
State: WA
County: Jefferson
Center coordinates of site (latitude/longitude): 47 Degrees 39" 9.5617" -122 degrees 54" 49.2957"
Approximate size of area (parcel) reviewed, including uplands: 250 acres.
Name of nearest waterway: Hood Canal
Name of watershed: Skokomish-Dosewallips Watershed

JURISDICTIONAL DETERMINATION
Completed: Desktop determination ☐ Date:
Site visit ☒ Date: March 8, 2007

Jurisdictional Determination (JD):

☐ Preliminary JD - Based on available information, ☐ *there appear to be* (or) ☐ *there appear to be no* "waters of the United States" and/or "navigable waters of the United States" on the project site. A preliminary JD is not appealable (Reference 33 CFR part 331).

☐ Approved JD – An approved JD is an appealable action (Reference 33 CFR part 331).
Check all that apply:

☐ *There are* "navigable waters of the United States" (as defined by 33 CFR part 329 and associated guidance) within the reviewed area. Approximate size of jurisdictional area:

☐ *There are* "waters of the United States" (as defined by 33 CFR part 328 and associated guidance) within the reviewed area. Approximate size of jurisdictional area:

☒ *There are "isolated, non-navigable, intra-state* waters or wetlands" within the reviewed area.
☐ Decision supported by SWANCC/Migratory Bird Rule Information Sheet for Determination of No Jurisdiction.

BASIS OF JURISDICTIONAL DETERMINATION:

A. Waters defined under 33 CFR part 329 as "navigable waters of the United States":
☐ The presence of waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

B. Waters defined under 33 CFR part 328.3(a) as "waters of the United States":
☐ (1) The presence of waters, which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
☐ (2) The presence of interstate waters including interstate wetlands[1].
☐ (3) The presence of other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate commerce including any such waters (check all that apply):
☐ (i) which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ (ii) from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ (iii) which are or could be used for industrial purposes by industries in interstate commerce.
☐ (4) Impoundments of waters otherwise defined as waters of the US.
☐ (5) The presence of a tributary to a water identified in (1) – (4) above.
☐ (6) The presence of territorial seas.
☐ (7) The presence of wetlands adjacent[2] to other waters of the US, except for those wetlands adjacent to other wetlands.

Rationale for the Basis of Jurisdictional Determination (applies to any boxes checked above). *If the jurisdictional water or wetland is not itself a navigable water of the United States, describe connection(s) to the downstream navigable waters. If B(1) or B(3) is used as the Basis of Jurisdiction, document navigability and/or interstate commerce connection (i.e., discuss site conditions, including why the waterbody is navigable and/or how the destruction of the waterbody could affect interstate or foreign commerce). If B(2, 4, 5 or 6) is used as the Basis of Jurisdiction, document the rationale used to make the determination. If B(7) is used as the Basis of Jurisdiction, document the rationale used to make adjacency determination:*

Lateral Extent of Jurisdiction: (Reference: 33 CFR parts 328 and 329)

☐ Ordinary High Water Mark indicated by:
- ☐ clear, natural line impressed on the bank
- ☐ the presence of litter and debris
- ☐ changes in the character of soil
- ☐ destruction of terrestrial vegetation
- ☐ shelving
- ☐ other:

☐ High Tide Line indicated by:
- ☐ oil or scum line along shore objects
- ☐ fine shell or debris deposits (foreshore)
- ☐ physical markings/characteristics
- ☐ tidal gages
- ☐ other:

☐ Mean High Water Mark indicated by:
☐ survey to available datum; ☐ physical markings; ☐ vegetation lines/changes in vegetation types.

☐ Wetland boundaries, as shown on the attached wetland delineation map and/or in a delineation report prepared by:

Basis For Not Asserting Jurisdiction:

☐ The reviewed area consists entirely of uplands.
☐ Unable to confirm the presence of waters in 33 CFR part 328(a)(1, 2, or 4-7).
☐ Headquarters declined to approve jurisdiction on the basis of 33 CFR part 328.3(a)(3).
☐ The Corps has made a case-specific determination that the following waters present on the site are not Waters of the United States:
- ☐ Waste treatment systems, including treatment ponds or lagoons, pursuant to 33 CFR part 328.3.
- ☐ Artificially irrigated areas, which would revert to upland if the irrigation ceased.
- ☐ Artificial lakes and ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing.
- ☐ Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons.
- ☐ Water-filled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States found at 33 CFR 328.3(a).
- ☒ Isolated, intrastate wetland with no nexus to interstate commerce.
- ☐ Prior converted cropland, as determined by the Natural Resources Conservation Service. Explain rationale:

- ☐ Non-tidal drainage or irrigation ditches excavated on dry land. Explain rationale:
- ☐ Other (explain):

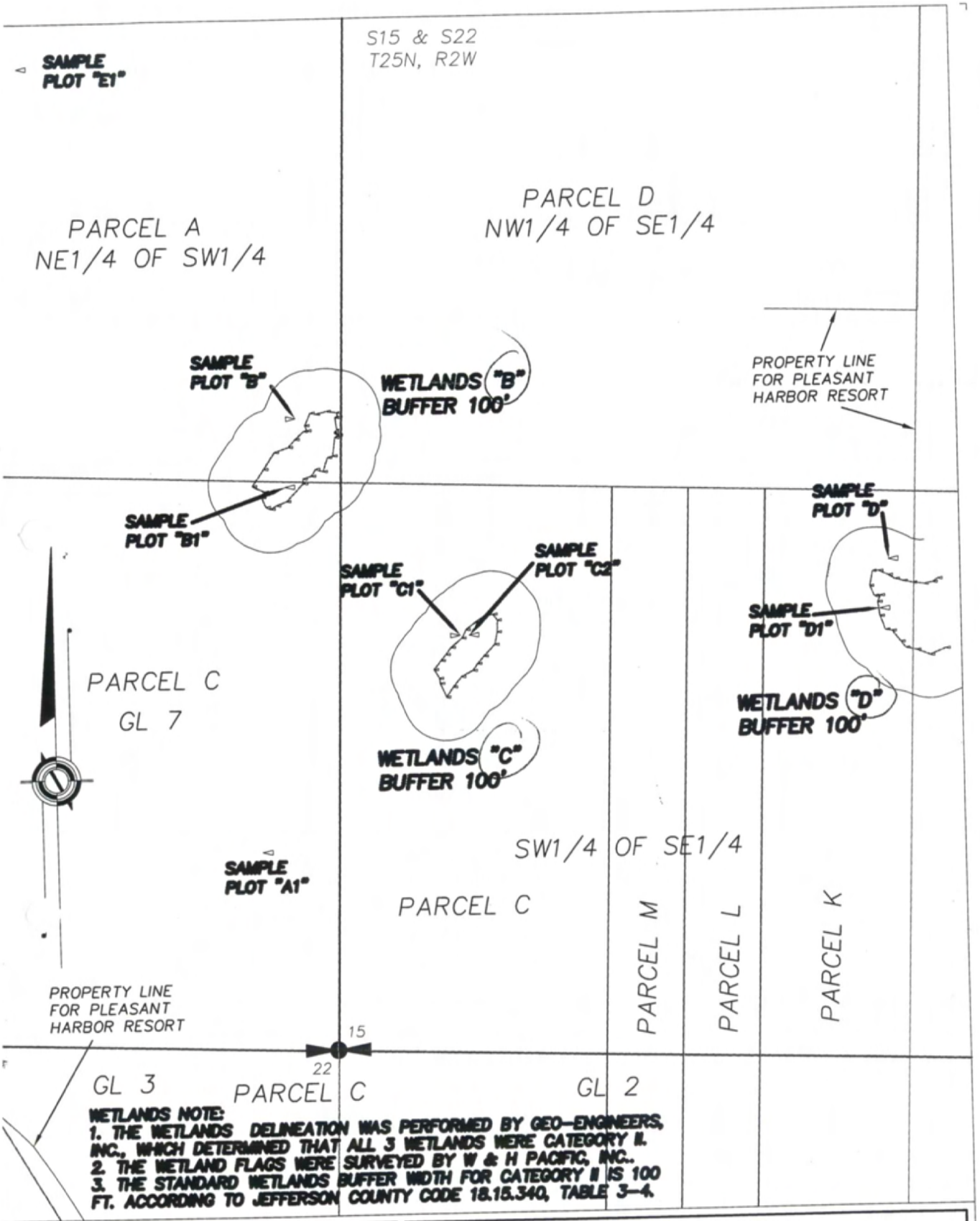
DATA REVIEWED FOR JURSIDICTIONAL DETERMINATION (mark all that apply):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant.
☒ Data sheets prepared/submitted by or on behalf of the applicant.
- ☒ This office concurs with the delineation report, dated July 20, 2006, prepared by: GeoEngineers
- ☐ This office does not concur with the delineation report, dated _____, prepared by:

☐ Data sheets prepared by the Corps.
☐ Corps' navigable waters' studies:
☐ U.S. Geological Survey Hydrologic Atlas:
☐ U.S. Geological Survey 7.5 Minute Topographic maps:
☐ U.S. Geological Survey 7.5 Minute Historic quadrangles:
☐ U.S. Geological Survey 15 Minute Historic quadrangles:
☐ USDA Natural Resources Conservation Service Soil Survey:
☐ National wetlands inventory maps:
☐ State/Local wetland inventory maps:
☐ FEMA/FIRM maps (Map Name & Date):
☐ 100-year Floodplain Elevation is: (NGVD)
☐ Aerial Photographs (Name & Date):
☐ Other photographs (Date):
☐ Advanced Identification Wetland maps:
☒ Site visit/determination conducted on: March 8, 2007 with Gail Terzi
☐ Applicable/supporting case law:
☐ Other information (please specify):

[1]Wetlands are identified and delineated using the methods and criteria established in the Corps Wetland Delineation Manual (87 Manual) (i.e., occurrence of hydrophytic vegetation, hydric soils and wetland hydrology).

[2]The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the U.S. by man-made dikes or barriers, natural river berms, beach dunes, and the like are also adjacent.



WETLANDS NOTE:
1. THE WETLANDS DELINEATION WAS PERFORMED BY GEO-ENGINEERS, INC., WHICH DETERMINED THAT ALL 3 WETLANDS WERE CATEGORY II.
2. THE WETLAND FLAGS WERE SURVEYED BY W & H PACIFIC, INC..
3. THE STANDARD WETLANDS BUFFER WIDTH FOR CATEGORY II IS 100 FT. ACCORDING TO JEFFERSON COUNTY CODE 18.15.340, TABLE 3-4.

DRAWN BY: SBI CHECKED BY:
LAST EDIT: 6/16/2006 APPROVED BY:
PLOT DATE: 06/16/06

DATE	BY	REV#	REVISION	CK'D	APPR

W&H PACIFIC
724 Columbia Street NW
Suite 140
Olympia, Washington 98501
(360) 754-3375
(360) 754-1195 Fax
whpacific.com

THE STATESMAN GROUP
PLEASANT HARBOR RESORT

EXHIBIT:
WETLANDS DELINEATION

BRINNON WA

SCALE:	PROJECT NO.	DRAWING FILE NAME:	SHEET
300	033099	33099-SURV-WL01	1 1

APPENDIX B
Site Photographs

APPENDIX B
SITE PHOTOGRAPHS

Photograph 1
Developed Pleasant Harbor Shoreline

Photograph 2
Developed Pleasant Harbor Shoreline

Photograph 3
Developed Pleasant Harbor Shoreline

Photograph 4
Developed Pleasant Harbor Shoreline

Photograph 5
Pleasant Harbor Shoreline looking west

Photograph 6
Pleasant Harbor Shoreline looking east

Photograph 7
Section 1, active RV Park

Photograph 8
Sanitary stations located throughout Section 1

Photograph 9
Wetland B

Photograph 10
Wetland B

Photograph 11
Wetland B buffer

Photograph 12
Wetland B kettle and buffer

Photograph 13
Kettle C banks

Photograph 14
Kettle C banks

Photograph 15
Kettle C vegetation

Photograph 16
Bottom of Kettle C

Photograph 17
Wetland C

Photograph 18
Native vegetation Wetland C buffer

Photograph 19
Road in Wetland C buffer

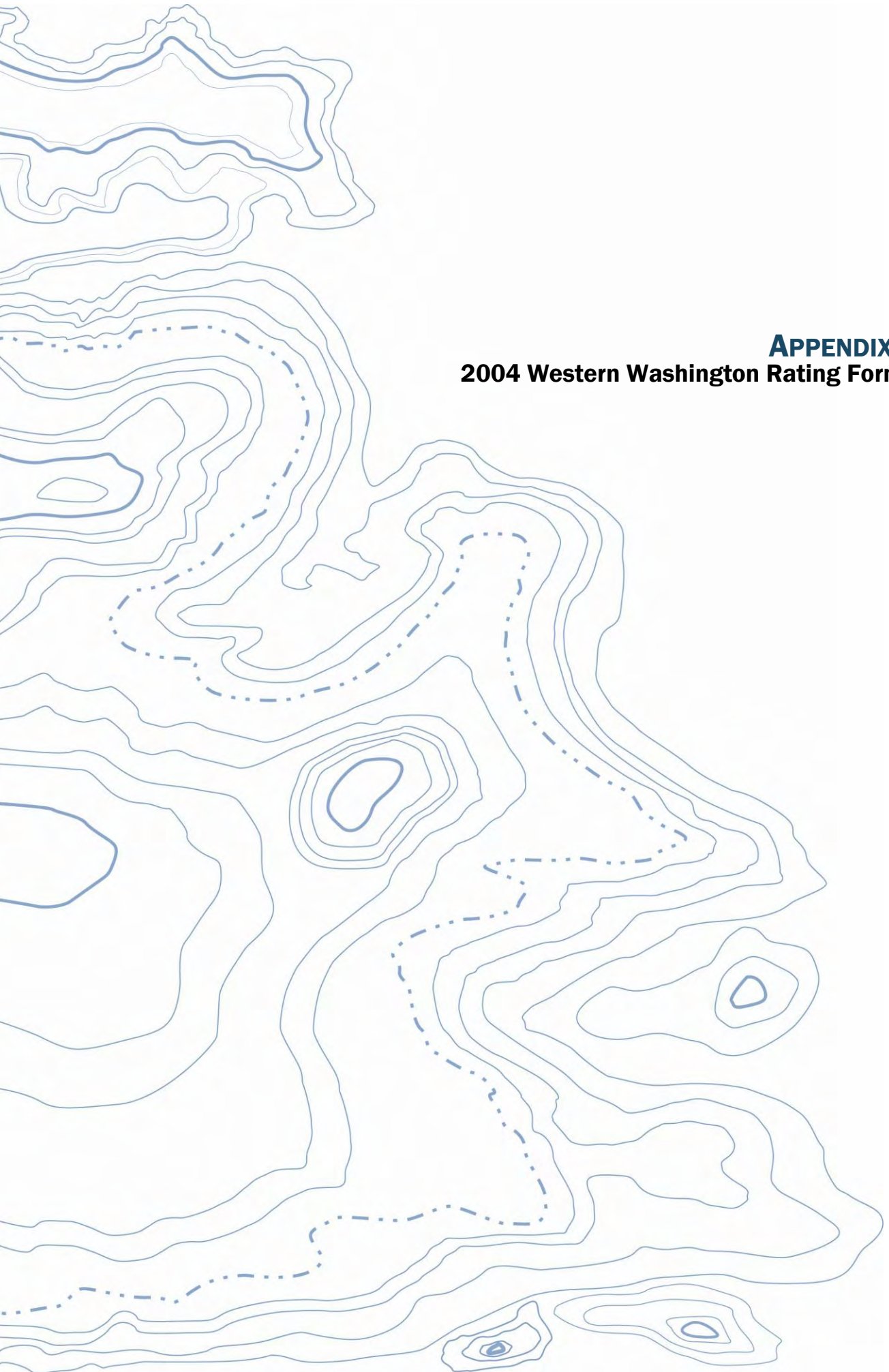
Photograph 20
Road and Scot's broom in Wetland C buffer

Photograph 21
Wetland D

Photograph 22
Road in Wetland D buffer

Photograph 23
Road in Wetland D buffer

Photograph 24
Bare area in Wetland D buffer



APPENDIX C
2004 Western Washington Rating Forms

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): **Wetland B** Date of site visit: **4/8/08**

Rated by: **G. Allington, M. Simmons** Trained by Ecology? Yes ☒ No ☐ Date of training:

SEC: **15** TWNSHP: **25N** RNGE: **2W** Is S/T/R in Appendix D? Yes ☐ No ☒

Map of wetland unit: Figure N/A **Estimated size: Approx. ~0.475 acres**

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I ☐ II ☐ III ☒ IV ☐

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

Score for Water Quality Functions	**10**
Score for Hydrologic Functions	**12**
Score for Habitat Functions	**22**
TOTAL Score for Functions	**44**

Category based on SPECIAL CHARACTERISTCS of Wetland I ☐ II ☐ Does not apply ☒

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

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics	
Estuarine	☐
Natural Heritage Wetland	☐
Bog	☐
Mature Forest	☐
Old Growth Forest	☐
Coastal Lagoon	☐
Interdunal	☐
None of the above	☒

Wetland HGM Class used for Rating	
Depressional	☒
Riverine	☐
Lake-fringe	☐
Slope	☐
Flats	☐
Freshwater Tidal	☐
Check if unit has multiple HGM classes present	☐

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need 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.	☐	☒
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 1 Natural Heritage Wetlands (see p. 19 of data form).	☐	☒
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*	☐	☒
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.	☐	☒

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

The hydrogeomorphic classification groups wetlands in to 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.

Classification of Vegetated Wetlands for 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 a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call 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 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 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) where at least 20 acres (8ha) in size;
   ☐ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland 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 types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ☐ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ☐ The overbank flooding occurs at least once every 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 of 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 located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

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

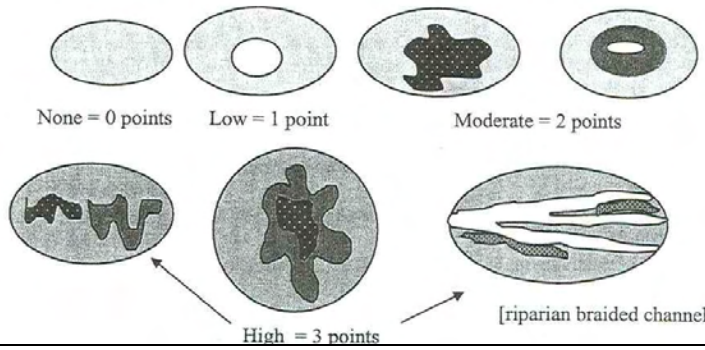
HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and 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 you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the potential to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) ..... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet ..... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) ..... points = 1 • 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 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure ___** **3**
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	**0**
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area..... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area..... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area..... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area..... points = 0 **Map of Cowardin vegetation classes**	**Figure ___** **3**
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland 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 years.* • Area seasonally ponded is > 1/2 total area of wetland ..... points = 4 • Area seasonally ponded is > 1/4 total area of wetland ..... points = 2 • Area seasonally ponded is < 1/4 total area of wetland ..... points = 0 **Map of Hydroperiods**	**Figure ___** **4**
	Total for D 1 *Add the points in the boxes above*	**10**
D 2	**Does the wetland have the opportunity to improve water quality?**	*(see p. 44)*
	Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ☐ Grazing in the wetland or within 150 ft ☐ Untreated stormwater discharges to wetland ☐ Tilled fields or orchards within 150 ft. of wetland ☐ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ☐ Residential, urban areas, golf courses are within 150 ft. of wetland ☐ Wetland is fed by groundwater high in phosphorus or nitrogen ☐ Other _____ YES multiplier is 2 NO multiplier is 1	Multiplier **1**
◆	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	**10**
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the potential to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet)..... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet ..... points = 2 • 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 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* ..... points = 0	**4**
	D 3.2 Depth of storage during wet periods. *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).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet ..... points = 7 • The wetland is a "headwater" wetland..... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet ..... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet..... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water. points = 1 • Marks of ponding less than 0.5 ft..... points = 0	**5**
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit..... points = 5 • The area of the basin is 10 to 100 times the area of the unit..... points = 3 • The area of the basin is more than 100 times the area of the unit..... points = 0 • Entire unit is in the FLATS class ..... points = 5	**3**
	Total for D 3 *Add the points in the boxes above*	**12**
D 4	**Does the wetland have the opportunity to reduce flooding and erosion?**	*(see p. 49)*
	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	Multiplier **1**

	groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ☐ Wetland is in a headwater of a river or stream that has flooding problems. ☐ Wetland drains to a river or stream that has flooding problems ☐ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ☐ Other _____ YES multiplier is 2 NO multiplier is 1	
◆	**TOTAL – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	**12**

Comments:

These questions apply to wetlands of all HGM classes.		**Points** (only 1 score per box)
	HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	
H 1	**Does the wetland have the potential to provide habitat for many species?**	
	H 1.1 Vegetation structure *(see P. 72)*: *Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.* ☐ Aquatic Bed ☒ Emergent plants ☒ Scrub/shrub (areas where shrubs have > 30% cover) ☒ Forested (areas where trees have > 30% cover) *If the unit has a forested class check if:* ☐ 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. *Add the number of vegetation types that qualify. If you have:* **Map of Cowardin vegetation classes** 4 structures or more..... points = 4 — 3 structures..... points = 2 2 structures..... points = 1 — 1 structure ..... points = 0	**Figure ___** **2**
	H 1.2 Hydroperiods *(see p.73)*: *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).* ☐ Permanently flooded or inundated — 4 or more types present points = 3 ☐ Seasonally flooded or inundated — 3 or more types present.....points = 2 ☒ Occasionally flooded or inundated — 2 types present.....points = 1 ☒ Saturated only — 1 type present .....points = 0 ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ **Lake-fringe wetland..... = 2 points** ☐ **Freshwater tidal wetland..... = 2 points** **Map of hydroperiods**	**Figure ___** **1**
	H 1.3 Richness of Plant Species *(see p. 75)*: Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.* If you counted: > 19 species ..... points = 2 5 – 19 species..... points = 1 List species below if you want to: < 5 species ..... points = 0 _____ _____ _____ _____	**1**
	H 1.4 Interspersion of Habitats *(see p. 76)*: Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". **Use map of Cowardin classes.**	**Figure ___** **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.* ☒ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) ☒ Standing snags (diameter at the bottom > 4 inches) in the wetland ☐ 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 (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ☐ At least 1/4 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 points in the column above*	**9**

H 2	**Does the wetland have the <u>opportunity</u> to provide habitat for many species?**	(only 1 score per box)
	H 2.1 <u>Buffers</u> *(see P. 80)*: *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".* ☐ 100m (330 ft) 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** ☒ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference .....**points = 4** ☐ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference.....**points = 4** ☐ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference .....**points = 3** ☐ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference.....**points = 3** **If buffer does not meet any of the criteria above:** ☐ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .....**points = 2** ☐ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK.....**points = 2** ☐ Heavy grazing in buffer .....**points = 1** ☐ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland).....**points = 0** ☐ Buffer does not meet any of the criteria above .....**points = 1** **Arial photo showing buffers**	**Figure ___** **4**
	H 2.2 <u>Corridors and Connections</u> *(see p. 81)* 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 a 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).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. 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? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	**4**

Total for page: **8**

Comments:

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82):

Which of the following priority habitats are within 330 ft. (100m) of the wetland? *NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.*

- ☐ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ☐ **Aspen Stands**: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)
- ☐ **Cliffs**: Greater than 7.6m (25 ft) high and occurring below 5000 ft.
- ☐ **Old-growth 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) > 81cm (32 in) dbh or > 200 years of age.
- ☐ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade Crest.
- ☐ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.
- ☐ **Talus**: Homogenous areas of rock rubble ranging in average size 0.15 – 2.0m (0.5 – 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- ☐ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages.
- ☐ **Oregon white Oak**: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.
- ☐ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.
- ☐ **Estuary/Estuary-like**: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons.
- ☐ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has 3 or more priority habitats..= 4 points If wetland has 1 priority habit .. = 1 point
If wetland has 2 priority habitats.....= 3 points 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).

0

H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)*

- There are at least 3 other wetlands within 1/2 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
- The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile .....points = 5
- There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. .....points = 3
- The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile.....points = 3
- There is at least 1 wetland within 1/2 mile .....points = 2
- There are no wetlands within 1/2 mile.....points = 0

5

	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	**13**
	TOTAL for H 1 from page 8	**9**
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	**22**

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO ☒	
	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? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ☐ 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 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 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ☐ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ☐ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D ☒ or accessed from WNHP/DNR web site ☐ YES ☐ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ☒ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ☒ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(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 function.*** 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 soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland 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? YES = go to question 3 NO = is not a bog for purpose of rating 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)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. 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*)? YES = Category I NO ☒ Is not a bog for purpose of rating	**Cat. I**

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland 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 function.* ☐ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three 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). 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. ☐ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = ☒ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ☐ The lagoon in which the wetland is located contains 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.)* YES = Go to SC 5.1 NO ☒ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ☐ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO ☒ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	

Comments:

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): **Wetland C** Date of site visit: **4/3/08**

Rated by: **G. Allington, J. Dadisman** Trained by Ecology? Yes ☒ No ☐ Date of training: **11/06 JD**

SEC: **15** TWNSHP: **25N** RNGE: **2W** Is S/T/R in Appendix D? Yes ☐ No ☒

Map of wetland unit: Figure N/A **Estimated size: Approx. ~0.279 acres**

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I ☐ II ☐ III ☒ IV ☐

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

Score for Water Quality Functions	**10**
Score for Hydrologic Functions	**14**
Score for Habitat Functions	**19**
TOTAL Score for Functions	**43**

Category based on SPECIAL CHARACTERISTCS of Wetland I ☐ II ☐ Does not apply ☒

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

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics	
Estuarine	☐
Natural Heritage Wetland	☐
Bog	☐
Mature Forest	☐
Old Growth Forest	☐
Coastal Lagoon	☐
Interdunal	☐
None of the above	☒

Wetland HGM Class used for Rating	
Depressional	☒
Riverine	☐
Lake-fringe	☐
Slope	☐
Flats	☐
Freshwater Tidal	☐
Check if unit has multiple HGM classes present	☐

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need 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.	☐	☒
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 1 Natural Heritage Wetlands (see p. 19 of data form).	☐	☒
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*	☐	☒
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.	☐	☒

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

The hydrogeomorphic classification groups wetlands in to 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.

Classification of Vegetated Wetlands for 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 a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call 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 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 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) where at least 20 acres (8ha) in size;
   ☐ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland 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 types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ☐ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ☐ The overbank flooding occurs at least once every 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 of 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 located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

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

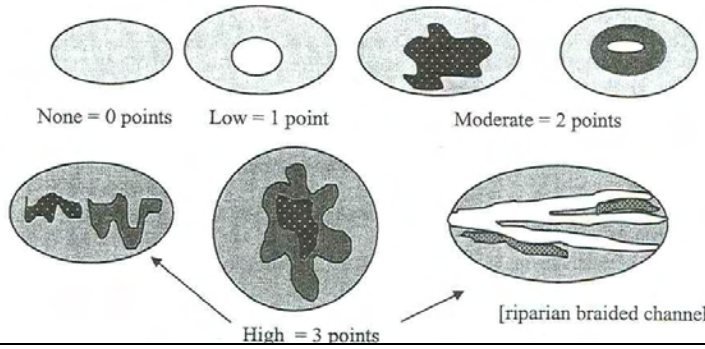
HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and 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 you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the potential to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) ..... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet ..... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) ..... points = 1 • 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 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure ___** **3**
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	**0**
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area..... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area..... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area..... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area..... points = 0 **Map of Cowardin vegetation classes**	**Figure ___** **3**
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland 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 years.* • Area seasonally ponded is > 1/2 total area of wetland ..... points = 4 • Area seasonally ponded is > 1/4 total area of wetland ..... points = 2 • Area seasonally ponded is < 1/4 total area of wetland ..... points = 0 **Map of Hydroperiods**	**Figure ___** **4**
	Total for D 1 *Add the points in the boxes above*	**10**
D 2	**Does the wetland have the opportunity to improve water quality?**	*(see p. 44)*
	Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ☐ Grazing in the wetland or within 150 ft ☐ Untreated stormwater discharges to wetland ☐ Tilled fields or orchards within 150 ft. of wetland ☐ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ☐ Residential, urban areas, golf courses are within 150 ft. of wetland ☐ Wetland is fed by groundwater high in phosphorus or nitrogen ☐ Other _____ YES multiplier is 2 NO multiplier is 1	Multiplier **1**
◆	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	**10**
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the potential to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet)..... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet ..... points = 2 • 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 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* ..... points = 0	**4**
	D 3.2 Depth of storage during wet periods. *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).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet ..... points = 7 • The wetland is a "headwater" wetland..... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet ..... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet..... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water. points = 1 • Marks of ponding less than 0.5 ft ..... points = 0	**5**
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit..... points = 5 • The area of the basin is 10 to 100 times the area of the unit..... points = 3 • The area of the basin is more than 100 times the area of the unit..... points = 0 • Entire unit is in the FLATS class ..... points = 5	**5**
	Total for D 3 *Add the points in the boxes above*	**14**
D 4	**Does the wetland have the opportunity to reduce flooding and erosion?**	*(see p. 49)*
	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	Multiplier **1**

	groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ☐ Wetland is in a headwater of a river or stream that has flooding problems. ☐ Wetland drains to a river or stream that has flooding problems ☐ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ☐ Other _____ YES multiplier is 2 NO multiplier is 1	
◆	**TOTAL – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	**14**

Comments:

These questions apply to wetlands of all HGM classes.		**Points** (only 1 score per box)
	HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	
H 1	**Does the wetland have the <u>potential</u> to provide habitat for many species?**	
	H 1.1 <u>Vegetation structure</u> *(see P. 72)*: *Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.* ☐ Aquatic Bed ☐ Emergent plants ☒ Scrub/shrub (areas where shrubs have > 30% cover) ☒ Forested (areas where trees have > 30% cover) *If the unit has a forested class check if:* ☐ 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. *Add the number of vegetation types that qualify. If you have:* **Map of Cowardin vegetation classes** 4 structures or more..... points = 4 — 3 structures..... points = 2 2 structures..... points = 1 — 1 structure ..... points = 0	**Figure ___** **1**
	H 1.2 <u>Hydroperiods</u> *(see p.73)*: *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).* ☒ Permanently flooded or inundated — 4 or more types present points = 3 ☒ Seasonally flooded or inundated — 3 or more types present.....points = 2 ☐ Occasionally flooded or inundated — 2 types present.....points = 1 ☐ Saturated only — 1 type present .....points = 0 ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ **Lake-fringe wetland..... = 2 points** ☐ **Freshwater tidal wetland..... = 2 points** **Map of hydroperiods**	**Figure ___** **1**
	H 1.3 <u>Richness of Plant Species</u> *(see p. 75)*: Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.* If you counted: > 19 species ..... points = 2 5 – 19 species..... points = 1 List species below if you want to: < 5 species ..... points = 0 _____ _____ _____ _____	**1**
	H 1.4 Interspersion of Habitats *(see p. 76)*: Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". **Use map of Cowardin classes.**	**Figure ___** **2**
	H 1.5 <u>Special Habitat Features</u> *(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.* ☒ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) ☒ Standing snags (diameter at the bottom > 4 inches) in the wetland ☐ 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 (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ☐ At least 1/4 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 points in the column above*	**8**

H 2	**Does the wetland have the <u>opportunity</u> to provide habitat for many species?**	(only 1 score per box)
	H 2.1 <u>Buffers</u> *(see P. 80)*: *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".* ☐ 100m (330 ft) 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** ☐ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference .....**points = 4** ☐ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference.....**points = 4** ☐ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference .....**points = 3** ☐ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference.....**points = 3** **If buffer does not meet any of the criteria above:** ☐ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .....**points = 2** ☒ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK.....**points = 2** ☐ Heavy grazing in buffer .....**points = 1** ☐ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland).....**points = 0** ☐ Buffer does not meet any of the criteria above .....**points = 1** **Arial photo showing buffers**	**Figure ___** **2**
	H 2.2 <u>Corridors and Connections</u> *(see p. 81)* 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 a 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).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. 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? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	**4**

Total for page: **6**

Comments:

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82):

Which of the following priority habitats are within 330 ft. (100m) of the wetland? *NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.*

- ☐ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ☐ **Aspen Stands**: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)
- ☐ **Cliffs**: Greater than 7.6m (25 ft) high and occurring below 5000 ft.
- ☐ **Old-growth 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) > 81cm (32 in) dbh or > 200 years of age.
- ☐ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade Crest.
- ☐ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.
- ☐ **Talus**: Homogenous areas of rock rubble ranging in average size 0.15 – 2.0m (0.5 – 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- ☐ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages.
- ☐ **Oregon white Oak**: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.
- ☐ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.
- ☐ **Estuary/Estuary-like**: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons.
- ☐ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has 3 or more priority habitats..= 4 points If wetland has 1 priority habit .. = 1 point
If wetland has 2 priority habitats.....= 3 points 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).

0

H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)*

- There are at least 3 other wetlands within 1/2 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
- The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile .....points = 5
- There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. .....points = 3
- The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile.....points = 3
- There is at least 1 wetland within 1/2 mile .....points = 2
- There are no wetlands within 1/2 mile.....points = 0

5

	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	**11**
	TOTAL for H 1 from page 8	**8**
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	**19**

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO ☒	
	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? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ☐ 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 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 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ☐ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ☐ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D ☒ or accessed from WNHP/DNR web site ☐ YES ☐ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ☒ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ☒ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(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 function.*** 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 soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland 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? YES = go to question 3 NO = is not a bog for purpose of rating 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)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. 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*)? YES = Category I NO ☒ Is not a bog for purpose of rating	**Cat. I**

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland 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 function.* ☐ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three 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). 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. ☐ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = ☒ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ☐ The lagoon in which the wetland is located contains 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.)* YES = Go to SC 5.1 NO ☒ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ☐ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO ☒ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	

Comments:

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): **Wetland D** Date of site visit: **4/3/08**

Rated by: **G. Allington, J. Dadisman** Trained by Ecology? Yes ☒ No ☐ Date of training: **11/06 JD**

SEC: **15** TWNSHP: **25N** RNGE: **2W** Is S/T/R in Appendix D? Yes ☐ No ☒

Map of wetland unit: Figure N/A **Estimated size: Approx. ~0.5 to 1 acre**

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I ☐ II ☐ III ☒ IV ☐

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

Score for Water Quality Functions	**10**
Score for Hydrologic Functions	**12**
Score for Habitat Functions	**24**
TOTAL Score for Functions	**46**

Category based on SPECIAL CHARACTERISTCS of Wetland I ☐ II ☐ Does not apply ☒

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

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics	
Estuarine	☐
Natural Heritage Wetland	☐
Bog	☐
Mature Forest	☐
Old Growth Forest	☐
Coastal Lagoon	☐
Interdunal	☐
None of the above	☒

Wetland HGM Class used for Rating	
Depressional	☒
Riverine	☐
Lake-fringe	☐
Slope	☐
Flats	☐
Freshwater Tidal	☐
Check if unit has multiple HGM classes present	☐

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need 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.	☐	☒
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 1 Natural Heritage Wetlands (see p. 19 of data form).	☐	☒
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*	☐	☒
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.	☐	☒

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

The hydrogeomorphic classification groups wetlands in to 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.

Classification of Vegetated Wetlands for 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 a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call 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 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 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) where at least 20 acres (8ha) in size;
   ☐ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland 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 types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ☐ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ☐ The overbank flooding occurs at least once every 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 of 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 located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

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

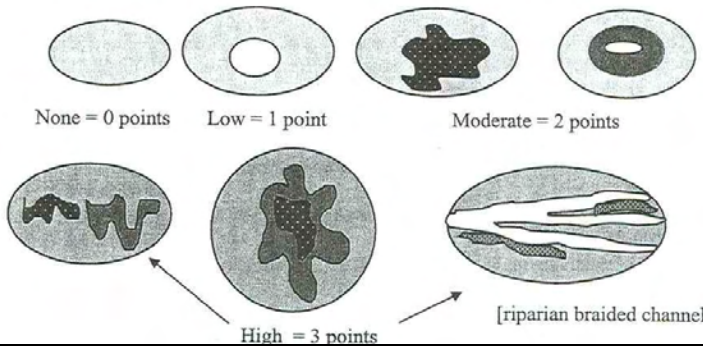
HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and 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 you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the potential to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) ..... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet ..... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) ..... points = 1 • 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 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure ___** **3**
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	**0**
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area..... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area..... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area..... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area..... points = 0 **Map of Cowardin vegetation classes**	**Figure ___** **3**
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland 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 years.* • Area seasonally ponded is > 1/2 total area of wetland ..... points = 4 • Area seasonally ponded is > 1/4 total area of wetland ..... points = 2 • Area seasonally ponded is < 1/4 total area of wetland ..... points = 0 **Map of Hydroperiods**	**Figure ___** **4**
	Total for D 1 *Add the points in the boxes above*	**10**
D 2	**Does the wetland have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ☐ Grazing in the wetland or within 150 ft ☐ Untreated stormwater discharges to wetland ☐ Tilled fields or orchards within 150 ft. of wetland ☐ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ☐ Residential, urban areas, golf courses are within 150 ft. of wetland ☐ Wetland is fed by groundwater high in phosphorus or nitrogen ☐ Other _____ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier **1**
◆	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	**10**
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the potential to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet)..... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet ..... points = 2 • 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 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* ..... points = 0	**4**
	D 3.2 Depth of storage during wet periods. *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).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet ..... points = 7 • The wetland is a "headwater" wetland..... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet ..... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet..... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water. points = 1 • Marks of ponding less than 0.5 ft ..... points = 0	**5**
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit..... points = 5 • The area of the basin is 10 to 100 times the area of the unit..... points = 3 • The area of the basin is more than 100 times the area of the unit..... points = 0 • Entire unit is in the FLATS class ..... points = 5	**3**
	Total for D 3 *Add the points in the boxes above*	**12**
D 4	**Does the wetland have the opportunity to reduce flooding and erosion?** 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	*(see p. 49)* Multiplier **1**

	groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ☐ Wetland is in a headwater of a river or stream that has flooding problems. ☐ Wetland drains to a river or stream that has flooding problems ☐ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ☐ Other _____ YES multiplier is 2 NO multiplier is 1	
◆	**TOTAL – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	**12**

Comments:

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.		**Points** (only 1 score per box)
H 1	**Does the wetland have the <u>potential</u> to provide habitat for many species?**	
	H 1.1 <u>Vegetation structure</u> *(see P. 72)*: *Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.* ☐ Aquatic Bed ☒ Emergent plants ☒ Scrub/shrub (areas where shrubs have > 30% cover) ☒ Forested (areas where trees have > 30% cover) *If the unit has a forested class check if:* ☐ 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. *Add the number of vegetation types that qualify. If you have:* **Map of Cowardin vegetation classes** 4 structures or more..... points = 4 — 3 structures..... points = 2 2 structures..... points = 1 — 1 structure ..... points = 0	**Figure ___** **2**
	H 1.2 <u>Hydroperiods</u> *(see p.73)*: *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).* ☒ Permanently flooded or inundated — 4 or more types present points = 3 ☐ Seasonally flooded or inundated — 3 or more types present.....points = 2 ☒ Occasionally flooded or inundated — 2 types present.....points = 1 ☐ Saturated only — 1 type present .....points = 0 ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ **Lake-fringe wetland..... = 2 points** ☐ **Freshwater tidal wetland..... = 2 points** **Map of hydroperiods**	**Figure ___** **1**
	H 1.3 <u>Richness of Plant Species</u> *(see p. 75)*: Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.* If you counted: > 19 species ..... points = 2 5 – 19 species..... points = 1 List species below if you want to: < 5 species ..... points = 0 _____ _____ _____ _____	**1**
	H 1.4 Interspersion of Habitats *(see p. 76)*: Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". **Use map of Cowardin classes.**	**Figure ___** **3**
	H 1.5 <u>Special Habitat Features</u> *(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.* ☒ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) ☒ Standing snags (diameter at the bottom > 4 inches) in the wetland ☐ 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 (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ☒ At least 1/4 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.*	**4**
	H 1 TOTAL Score – potential for providing habitat *Add the points in the column above*	**11**

H 2	**Does the wetland have the <u>opportunity</u> to provide habitat for many species?**	(only 1 score per box)
	H 2.1 <u>Buffers</u> *(see P. 80)*: *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".* ☐ 100m (330 ft) 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** ☒ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference .....**points = 4** ☐ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference.....**points = 4** ☐ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference .....**points = 3** ☐ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference.....**points = 3** **If buffer does not meet any of the criteria above:** ☐ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .....**points = 2** ☐ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK.....**points = 2** ☐ Heavy grazing in buffer .....**points = 1** ☐ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland).....**points = 0** ☐ Buffer does not meet any of the criteria above .....**points = 1** **Arial photo showing buffers**	**Figure ___** **4**
	H 2.2 <u>Corridors and Connections</u> *(see p. 81)* 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 a 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).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. 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? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	**4**

Total for page: **8**

Comments:

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82):
Which of the following priority habitats are within 330 ft. (100m) of the wetland? *NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.*

- ☐ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ☐ **Aspen Stands**: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)
- ☐ **Cliffs**: Greater than 7.6m (25 ft) high and occurring below 5000 ft.
- ☐ **Old-growth 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) > 81cm (32 in) dbh or > 200 years of age.
- ☐ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade Crest.
- ☐ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.
- ☐ **Talus**: Homogenous areas of rock rubble ranging in average size 0.15 – 2.0m (0.5 – 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- ☐ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages.
- ☐ **Oregon white Oak**: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.
- ☐ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.
- ☐ **Estuary/Estuary-like**: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons.
- ☐ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has 3 or more priority habitats..= 4 points If wetland has 1 priority habit .. = 1 point
If wetland has 2 priority habitats.....= 3 points 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).

0

H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)*

- There are at least 3 other wetlands within 1/2 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
- The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile .....points = 5
- There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. .....points = 3
- The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile.....points = 3
- There is at least 1 wetland within 1/2 mile .....points = 2
- There are no wetlands within 1/2 mile.....points = 0

5

H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4* **13**

TOTAL for H 1 from page 8 **11**

◆ **Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1*** **24**

Comments:

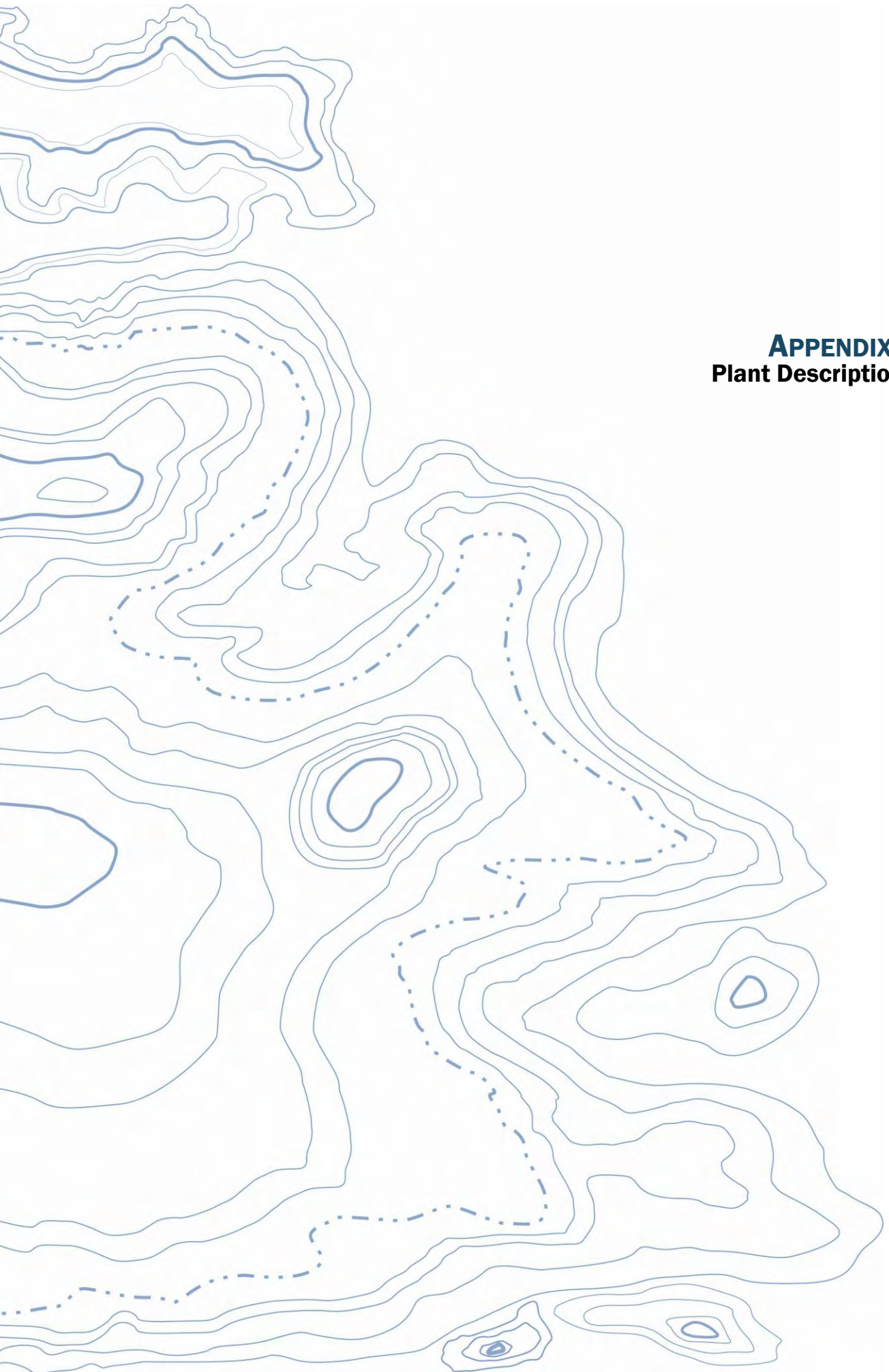
CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO ☒	
	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? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ☐ 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 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 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ☐ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ☐ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D ☒ or accessed from WNHP/DNR web site ☐ YES ☐ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ☒ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ☒ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(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 function.*** 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 soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland 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? YES = go to question 3 NO = is not a bog for purpose of rating 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)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. 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*)? YES = Category I NO ☒ Is not a bog for purpose of rating	**Cat. I**

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland 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 function.* ☐ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three 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). 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. ☐ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = ☒ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ☐ The lagoon in which the wetland is located contains 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.)* YES = Go to SC 5.1 NO ☒ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ☐ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO ☒ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	

Comments:



APPENDIX D
Plant Descriptions

APPENDIX D
PLANT DESCRIPTIONS

Trees

Big Leaf Maple (*Acer macrophylla*): This tall tree has a massive, squat main trunk and soaring, huge vertical limbs. In the open, it forms a round, spreading crown, while in a dense stand it becomes a tall straight tree. It has long clusters of yellow flowers in the spring, and very large, lobbed leaves which turn yellow in the fall. Various birds eat its two-winged "helicopter" fruits, and the leaves provide foliage for deer and elk. Young trees grow rapidly in the spring (Thurston County Conservation District, 2008). It grows in dry to moist sites, often with Douglas fir and often on sites disturbed by fire, clearing or logging at low to middle elevations (Pojar and MacKinnon, 1994).

Douglas Fir (*Pseudotsuga menziesii*): This tree grows well in various soil types, especially in sunny areas. It has flat needles that are sharp-pointed but not prickly, and many medium-sized cones that drop to the ground each fall. The ridged Douglas fir bark on older trees is fire-resistant because of its thickness. An uncrowded tree has pyramidal crown with dense foliage. Deer and rodents browse on the seedlings, and small birds and mammals eat the seeds. It needs well-drained soil and full sun but is located everywhere from extremely dry, low elevation sites to moist mountain sites (Thurston County Conservation District, 2008; Pojar and MacKinnon, 1994).

Pacific Willow (*Salix lucida ssp. lasiandra*): This tree typically has one or more leaning, crooked trunks and an upright to rounded form. It can grow 20- to 40-feet tall as a deciduous shrub or tree and grows in coastal dune wetland communities along the outer coast and coastal freshwater swamps around Puget Sound (Department of Ecology, 1993). The branches are brown and twigs glossy, with yellow, duckbill-shaped buds that are usually hairless and brittle at base. The bark is fissured yellowish-brown on older trees. This plant is found along riverbanks, floodplains, lakeshores and wet meadows. It tolerates full sin to partial shade and prefers moist soils (Pojar and MacKinnon, 1994).

Red Alder (*Alnus rubra*): This tree is fast growing and can reach up to 60 to 100 feet tall. It is a deciduous tree, usually single stemmed and forms pure stands or intermixes with Western Red Cedar and Western Hemlock. Red alder is intolerant of shade and will grow in nitrogen-deficient soils due to its ability to fix atmospheric nitrogen. This tree provides food for grouse, pine siskin, black-capped chickadee, kinglet and beaver and is a common nest tree for great blue heron (Department of Ecology, 1993). It tends to grow in moist woods, streambanks, floodplains, slide tracks, and recently cleared land and is often found in pure stands and at low elevations (Pojar and MacKinnon, 1994).

Western Red Cedar (*Thuja plicata*): This is a sweet-smelling, coniferous evergreen tree that likes moist soil but can also survive in drier habitats. It grows slowly, but can grow to heights of between 60 and 200 feet. As it grows, its crown becomes open and its lower branches droop. Clusters of small brown cones grow at the ends of the branches (Thurston County Conservation District, 2008). Instead of needle leaves, it has tiny scales set snugly on the branches and it is resistant to rot and fungus (Pojar and MacKinnion, 1994). It provides protective and nesting cover for wildlife and also provides twigs and foliage for browsers. Its bluish-black, berry-like fruit is important to many large and small birds and mammals (Martin *et al*., 1961).

Shrubs

Evergreen Huckleberry (*Vaccinium ovatum*): This plant has glossy, dark green leaves on many erect, hairy branches which start at the base of the plant. It produces purplish-black fruits. New shoots are bronzy red, and mature foliage is often reddish purple (Thurston County Conservation District, 2008). It is found in the understory of coniferous forests (especially edges and openings) at low elevations. It also prefers shade and grows in moist to dry sites (Pojar and MacKinnon, 1994).

Pacific Ninebark (*Physocarpus capitatus*): Pacific ninebark is a deciduous shrub that grows to about 15 feet tall. It typically grows in moist but well-drained soils along streams, in full sun to part shade (Department of Ecology, 1993). It also grows in wet, somewhat open spaces (streamside thickets, edges of moist woods, coastal marshes, meadows, margins of lakes and streams) and occasionally on drier, shrubby sites (Pojar and MacKinnon 1994). The twigs and greenery provide browse for girds and wildlife.

Salal (*Gaultheria shallon*): This plant is a robust, evergreen shrub which often forms dense thickets. It has lustrous, dark-green leaves, showy pink flower clusters, and purplish-black berries that are eaten by birds, rodents and people. Salal can be damaged by the strawberry root weevil (Thurston County Conservation District, 2008). It occurs in the understory of coniferous forests and rocky bluffs and is found in low to medium elevations. It likes partial shade to deep shade and is found in moist to dry sites (Pojar and MacKinnon, 1994).

Salmonberry (*Rubus spectabilis*): This shrub can grow 3 to 10 feet high and has shredding, light- or golden-brown bark. It has woody sparsely thorned stems; and zigzag twigs. Flowers are large (about 1½ inches across), borne singly, and are pink to dark or purplish-red. Large raspberry-like fruits appear in late spring, ripening over a fairly long period to become yellow to red or deep purple (United States Army Corps of Engineers, 2005). Salmonberry grows in moist to wet places, and is often abundant along stream edges, avalanche tracks and in wet logged areas. It prefers full sun to full shade (Pojar and MacKinnon, 1994).

Vine Maple (*Acer circinatum*): This shrub can grow up to 20 feet tall and has sprawling branches that often form thickets and colonies. The leaves are green during the summer but during the fall they turn either golden in the shade or bright red in full sun. It has white flowers that form in clusters at the end of the shoots and winged fruits that turn red or brown. This plant grows in moist to wet places and prefers partial to deep shade which typically occurs under tree canopies (Pojar and MacKinnon, 1994).

Herbaceous

Sword Fern (*Polystichum munitum*): This evergreen shrub will typically reach 2 to 2½ feet in height and 4 feet in diameter. The leaves are narrow lance-shaped pinnately dark green with fringed edges. Large orange spores appear on the underside of each leaf. The roots are rhizomes (Thurston County Conservation District, 2007). Typically found in moist forests at low to middle elevations, it is abundant and widespread throughout the Pacific Northwest (Pojar and Mackinnon, 1994).

Slough sledge *(Carex obnupta):* This herbaceous plant grows one to three feet tall and spreads by rhizomes to form monotypic stands. It is limited to western Washington and required wet soils to flourish. The plant can tolerate deep shade or full sun and commonly grows in red alder-dominated swamps in association with skunk cabbage, water parsley and salmonberry (Department of Ecology 1993).

Lady Fern *(Athyrium felix-femina):* Lady fern is a deciduous perennial fern that can grow to four feet tall. It spreads by rhizomes slowly and eventually spreads to form clusters of individual plants. It grows in partial shade to full shade and prefers wet to moist soils (Department of Ecology, 1993). It is commonly found in moist to wet forest, swamps, thickets, openings, slidetracks, streambanks, gullies, meadows and clearings (Pojar and MacKinnon, 1994).

Small-fruited bulrush *(Scirpus microcarpus):* This herbaceous plant grows between two to four feet tall and is a deciduous perennial herb. It spreads by rhizomes to form monotypic stands in saturated soils and shallow seasonal standing water. It is commonly found along streams and in freshwater marshes (Department of Ecology, 1993). Stems are usually clustered, from a sturdy rhizome, stout, triangular, leafy, to 1.5 meters tall. It grows in full sun and prefers wet to shallow water (Pojar and (MacKinnon, 1994).