WETLAND DELINEATION REPORT AND BUFFER MITIGATION PLAN FOR FORT WARD LOTS 5 & 6

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Fort Ward Lots 5 & 6 RUE

Bainbridge Island, Washington

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

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INTRODUCTION

Ecological Land Services, Inc. (ELS) was contracted by Julian Prosser to conduct a wetland boundary delineation and report for Fort Ward Estates Lots 5 and 6, which is comprised of parcel numbers 4146-004-005-0004 and 4146-004-006-0003, within a portion of Section 11, Township 24 North, Range 2 East of the Willamette Meridian, in Bainbridge Island, Washington (Figure 1). This report summarizes findings of the wetland delineation according to the *City of Bainbridge Island Municipal Code (BIMC), Chapter 16.20.160* (2007) for delineation methodology, wetland categorization, and required buffer widths.

METHODOLOGY

The wetland delineation followed the Routine Determination Method according to the U.S. Army Corps of Engineers, *Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region, Version 2.0* (U.S. Army Engineer Research and Development Center 2010).

The Routine Determination Method examines three parameters—vegetation, soils, and hydrology—to determine if wetlands exist in a given area. Hydrology is critical in determining what is wetland, but is often difficult to assess because hydrologic conditions can change periodically (hourly, daily, or seasonally). Consequently, it is necessary to determine if hydrophytic vegetation and hydric soils are present, which would indicate that water is present for long enough duration to support a wetland plant community. By definition, wetlands are those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands are regulated as "Waters of the United States" by the U.S. Army Corps of Engineers (USACE), as "Waters of the State" by the Washington Department of Ecology (Ecology), and locally by Bainbridge Island.

To determine the current presence or absence of wetlands on this property, ELS biologists collected data on vegetation, hydrology, and soils. The delineation site visit was conducted on June 10, 2016 during which, one wetland was delineated east of Lot 6 and along the east property line of Lot 5. There was also a delineation site visit conducted on lots 2, 3, and 4 to the south on September 9, 2016, which continued the wetland boundary to the southern extent. The boundary of the wetland was delineated using consecutively numbered fluorescent flagging labeled "WETLAND DELINEATION." Wetland boundaries were determined through breaks in topography, changes in vegetation, and evidence of surface hydrology. Vegetation, hydrology, and soil data was collected at four test plots to verify the wetland boundary delineations (Appendix A). The wetland boundary was mapped using a Trimble handheld Global Positioning System (GPS) unit to show the extent of the wetland on the site map (Figure 2).

SITE DESCRIPTION

Lots 5 and 6 are located on the east side of Soundview Drive NE (Photoplate 1) in the Fort Ward Estates area of Bainbridge Island (Figure 1). They are rectangular-shaped parcels with Lot 6

oriented north to south and Lot 5 oriented west to east (Figure 2). The properties are level on the west side and slope down gradually into a shallow depression on the east half (Photoplates 2 and 3). The properties are undeveloped, but the level areas in the Soundview Drive right-of-way are being mowed and utilized by neighboring residents for storage of vehicles. The two lots are composed mainly of disturbed upland forest (Photoplates 1, 2, 4, and 5) with a deciduous tree canopy. The shrub layer is extremely dense below the sparse trees and creates an impenetrable barrier. The adjacent properties are undeveloped, with the exception of the properties across Soundview Drive which are developed residentially. The right-of-way of Belfair Avenue lies north of Lot 6 but is unimproved and used as a pedestrian path.

The wetland was identified and delineated east of Lot 6 extending south along the east edge of Lot 5 (Figure 2). Wetland A is situated in a depressional trough bordered by residential development on the southeast and south sides. It is a depressional system dominated by a combination of forested, scrub/shrub, and emergent vegetation communities (Photoplates 3, 4, and 5). The wetland has a seasonally flooded hydroperiod with northerly water flow into a culvert at the north end that conveys water into wetlands north of Belfair Avenue (Photoplate 4).

The project will propose one single family residences on each lot. Because the required wetland buffers (mainly the water quality buffer) encompasses the entire buildable portion of each lot, the homes will require permitting through the Reasonable Use Exception (RUE). A mitigation plan has been prepared to address the impacts associated with constructing the homes within the water quality buffer. Mitigation is proposed as a combination of onsite enhancement and replacement of the culvert beneath Belfair Avenue. The culvert was not installed at the proper grade and is angled up to the north so water only leaves the wetland during periods of high precipitation events (Figure 9). The improperly installed culvert has caused the wetland on these lots to expand over time and has at least in part created the buffer issues on these lots. The connection to wetland areas north of Belfair Avenue will improve the function of the onsite wetland as well as the wetlands to the north.

VEGETATION

Wetland Vegetation

Wetland A is comprised of forested, scrub/shrub, and emergent communities. There were no trees at Test Plot 1 in Wetland A but the adjacent tree canopy is dominated by western red cedar (*Thuja plicata*, FAC) and bitter cherry (*Prunus emarginata*, FACU). The shrub layer was dominated by dense rose spirea (*Spiraea douglasii*, FACW) and Nootka rose (*Rosa nutkana*, FAC) with Himalayan blackberry (*Rubus armeniacus*, FAC) occurring in Test Plot 4. Lower percentages of pacific willow (*Salix lucida ssp. lasiandra*, FACW), English hawthorn (*Crataegus monogyna*, FAC), and English holly (*Ilex aquifolium*, FACU) occur in wetland test plots. Lady fern (*Athyrium cyclosorum*, FAC), creeping buttercup (*Ranunculus repens*, FACW), and large-leaf avens (*Geum macrophyllum*, FACU) dominate the herbaceous layer with lower percentages of sword fern (*Polystichum munitum*, FACU), horsetail (*Equisetum arvense*, FAC), velvet grass (*Holcus lanatus*, FAC), soft rush (*Juncus effusus*, FACW), and American vetch (*Vicia americana*, FAC) also present.

Upland Vegetation

The upland areas onsite are composed of forested and shrub communities. The upland test plots did not include trees, however the adjacent forest was dominated by western red cedar, red alder (*Alnus rubra*, FAC), and big leaf maple (*Acer macrophyllum*, FACU). Shrub vegetation in upland test plots is dominated by Nootka rose, English hawthorn, and Himalayan blackberry with lower occurrences of evergreen blackberry (*Rubus laciniatus*, FACU). The herbaceous layer is dominated by sword fern, velvet grass, and orchard grass (*Dactylis glomerata*, FACU) with lower percentages of trailing blackberry (*Rubus ursinus*, FACU), veronica (*Veronica americana*, OBL), horsetail, fringe cup (*Tellima grandiflora*, FACU), bird's foot trefoil (*Lotus corniculatus*, FAC), soft rush, and large-leaf avens also present.

The dominant vegetation found onsite is recorded on the attached wetland determination data forms (Appendix A). The indicator status, following the common and scientific names, indicates how likely a species is to be found in wetlands. Listed from most likely to least likely to be found in wetlands, the indicator status categories are:

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

SOILS

As referenced on the U.S.D.A. Natural Resources Conservation Service (NRCS 2015) website, Cathcart silt loam, 2 to 8 percent slopes (7) is mapped across both lots (Figure 4). Cathcart soils are not classified as hydric (NRCS 2014) and do not have inclusions of hydric soil map units. Areas mapped as hydric soils do not necessarily mean that an area is or is not a wetland—hydrology, hydrophytic vegetation, and hydric soils must all be present to classify an area as a wetland.

Wetland Soils

The evaluated wetland soils at Test Plots 1 and 4 were composed of silt loam to clay loam with black to dark grayish brown (10YR 2/1 to 10YR 4/2) soil matrix colors. Redoximorphic features were observed in 5 to 15 percent of the matrix and having dark yellowish-brown to yellowish-brown (10YR 3/4 to 10YR 5/8) colors. The soil profiles meet the criteria for hydric soil indicators F3 because of the depleted matrix chromas and presence of redoximorphic features.

Upland Soils

The evaluated upland soils at Test Plots 2 and 3 consisted of gravelly silt loam to silt loam with brown to dark grayish-brown (10YR 3/2 to 10YR 4/2) soil matrix colors. The upland soil profiles appear to meet the criteria for hydric soil indicator F3 because depleted matrix chromas were recorded. However, the soil profiles were determined to be non-hydric because the profiles lacked redoximorphic features and closely match the description for Cathcart silt loam, which is not

classified as hydric. These areas are determined to be upland due to the lack of hydrophytic vegetation and/or wetland hydrology.

HYDROLOGY

Hydrology was not observed in Wetland A during the June 2016 site visit but there were indicators of surface water at the north end during the growing season. Although surface water was not present in the wetland, the soil sample was glistening at Test Plot 4 indicating that the soil remains damp. The source of hydrology to Wetland A is mainly direct precipitation and surface water runoff from adjacent developed properties. It appears that Wetland A fills with rain water and runoff during the winter and spring to a depth that allows flow of water north through the culvert at the north end (under Belfair Avenue). The culvert appears to be angled slightly with the higher end at the north, which prevents water flow until the wetland is flooded beyond its boundaries (Figure 9). This is evident when previous delineation maps are compared over time (Figure 9). The culvert conveys water into the wetland north of Belfair Avenue. The wetland north of Belfair Avenue is part of a series of wetlands that extend northerly to the north end of Fort Ward Estates. The wetlands discharge into a stream that flows northerly to Blakely Harbor. Water was not present in the upland areas and there was no evidence of wetland hydrology.

NATIONAL WETLAND INVENTORY

The National Wetlands Inventory (NWI) does not map wetlands on or within 250 feet of the property (Figure 5). The findings of the ELS delineation do not agree with the NWI mapping because wetland is present along the east edges of the two lots. The NWI maps should be used with discretion because they are used to gather general wetland information about a regional area and therefore are limited in accuracy for smaller areas because of their large scale.

BAINBRIDGE ISLAND CRITICAL AREAS

The Bainbridge Island Critical Areas map (BI 2015) maps wetland outside the east boundary of Lot 6 and extending onto the east boundary of Lot 5 (Figure 6), which represents Wetland A. The ELS biologists agree with the general mapping of wetland (Figure 2).

CONCLUSIONS

WETLAND CATEGORIZATION

The wetland is situated in a depression having emergent, scrub/shrub, and forested vegetation classes and a seasonally flooded hydroperiod. The wetland was rated according to *Washington State Wetlands Rating System for Western Washington-2014 Update* (Rating System) (Hruby 2014). Wetland A received 17 points on the rating form and is considered a Category III, Depressional system rated based on functions (Appendix B).

CRITICAL AREA REGULATIONS

The *BIMC Chapter 16.20.160* specifies buffers based on wetland category, scores for habitat functions on the rating form, and the intensity of the proposed land use in accordance with the 2014 wetland rating system. The *BIMC* has not been revised to meet the 2014 rating system scores so does not reflect the new point totals for determining the buffer widths based on habitat scores.

However, Ecology has developed guidance for converting 2004 wetland rating system habitat scores to the 2014 wetland rating system habitat scores. Water quality buffers are required for all wetlands and habitat buffer widths are required for wetlands scoring moderate to high habitat functions on the rating form. Wetland A is a Category III wetland that received a moderate score for habitat function. Because these lots are less than 1 acre in size, development on both are considered high intensity land use, which increases the width of the water quality and habitat buffers. The *BIMC* requires an 80-foot water quality buffer and a 70-foot habitat buffer because of the moderate habitat score and the high intensity land use proposal. The 150-foot buffer extends beyond the west property boundaries and across Soundview Drive. However, buffers do not extend beyond improved roads that serve more than one home; the buffer width for Wetland A extends only to Soundview Drive. Therefore, the total buffer width provided to Wetland A is 110 feet. A 15-foot building and impervious surface setback is also specified from the edge of critical area buffers.

Buffer reductions are permitted by the *BIMC Section 16.20.050* through the buffer averaging process. The buffer is reduced in one location and increased in another by the same square footage to create a buffer that averages the required buffer width. The *BIMC* also permits reductions of the habitat buffers for wetlands if it can be documented that the reduction will provide a buffer that result in adequate protection for the wetland. A habitat management plan and buffer mitigation are required as part of this reduction process. Buffer reductions for water quality buffers are permitted only through the formal variance or Reasonable Economic Use Exception processes.

REASONABLE USE EXCEPTION

The project proposes building one single family home on each lot. The two lots are entirely encompassed by the current wetland buffers, right-of-ways, and front yard setbacks. The required water quality and habitat buffers extend beyond the west lot boundaries so no habitat buffer occurs on these lots. Administrative options for buffer reduction do not apply to water quality buffer widths. Even if administrative reductions were permitted, it would not allow enough buildable area to accommodate the proposed homes. Therefore, in order to accommodate homes on each lot, the water quality buffer will need to be reduced by the Reasonable Use Exception process. Buffer mitigation is required to compensate for the buffer reduction per the *BIMC 16.20.050*.

SITE DEVELOPMENT PROPOSAL

The project proposes construction of a single family home on each lot as close to Soundview Drive as possible (Figure 3). The entirety of each lot is encompassed by wetland buffers, the right-of-way of Soundview Drive, and front/side yard setbacks. Any construction on the lots will impact the water quality buffer. The wetland was rated as a Category III with a moderate habitat score (5 points) and so requires a total buffer of 150 feet. The homes will be situated within the 150-foot wetland buffer where the vegetation is dominated by grasses and non-native invasives, which primarily include Himalayan blackberry (Photoplate 1). Combined, the homes represent 6,114 square feet of impact to the wetland buffer. The driveway, walkways, and hardscaping associated with both houses represent 2,400 square feet of pervious pavement. The use of pervious pavement reduces the amount of runoff that can pick up pollutants during wet conditions. The stormwater will infiltrate directly into the soil beneath the pavement and filter

through the soil before reaching the wetland. While the typical requirement for buffer mitigation is a ratio of 1:1, the project on these lots cannot meet this requirement because the reduced buffer only totals 4,578, for a ratio of 0.75:1, impact to enhancement. There is also little opportunity on the lots to improve buffer conditions because it is densely vegetated with Nootka rose and hawthorn trees. Therefore, the mitigation will include a combination of onsite buffer enhancement around the proposed homes and replacement of the culvert under Belfair Avenue. Replacing the culvert will restore the hydrologic continuity of this wetland to the wetland north of Belfair Avenue (Figure 9). Buffer enhancement will include planting of native vegetation (small trees, shrubs, and herbaceous vegetation) around the house with a line of lower growing conifer trees (shore pine) and a split-rail fence along the buffer edge. The houses on these lots, encompassed by wetland buffer, will result in permanent impacts to the buffer function but will have minimal impact on the wetland. The proposed home sites will result in removal of non-native shrubs and grass from 10,692 square feet of the wetland buffer, 4,578 square feet of which will be replanted upon completion. The minimum buffer width occurs on Lot 5 because the lot is oriented west to east whereas; Lot 6 is oriented north to south. The homes will be situated 23 feet from the wetland boundary on Lot 5 and 32 feet on Lot 6.

MITIGATION SEQUENCING

The 150-foot wetland buffer covers the two lots and extends beyond Soundview Drive. The proposed homes with driveways will occupy 6,114 square feet (the two lots combined) of the buffer. The houses are also constrained by the setbacks required from the property lines, which include a 15-foot side yard setback to the north and south. Additionally, there is a 25-foot front yard setback from the Soundview Drive right-of-way, which significantly reduces the area available for home construction on these lots. As part of the mitigation process, projects proposed within a wetland buffer are required to address the mitigation sequencing process to assess whether the project can avoid, minimize, rectify, or reduce impacts before identifying compensation or mitigation measures.

Avoiding Impacts: The undeveloped lots are vegetated by somewhat disturbed upland plant communities along the west halves. The east halves are encompassed by dense upland and wetland shrub communities. The proposed house locations are composed of grasses and non-native shrubs with several vehicles from the adjacent residences with the road right-of-way. The project proposes no work in the wetland itself and so avoids impacts to the wetland environment. The project cannot avoid impacts to the buffer because the properties are completely composed of buffers and setbacks.

Minimizing Impacts: The project is minimizing the impacts by proposing the houses as close to Soundview Drive as allowed by the setbacks in a portion of the buffer that has low function. In addition, reduction of the front yard setback is proposed to minimize the impacts to the wetland and buffer. Both houses have been positioned so that they are as far from the wetland as possible and the footprints have been minimized to the extent possible. The use of pervious pavement for the driveways and walkways will minimize the amount of runoff as well as the opportunity for runoff to pick up pollutants. The location and orientation of the house is in keeping with the Fort

Ward Design Guidelines. The homes use the same design and orientation to provide small affordable housing units and to keep construction costs low.

Rectifying the Impacts: The project represents a permanent impact to the buffer so cannot rectify the impacts to the affected habitats.

Reducing or Eliminating the Impacts: The project cannot reduce or eliminate the impacts by preservation and maintenance.

Compensating for the Impacts: The project cannot avoid, rectify, or reduce the impact to the wetland buffer but has minimized the impact to the extent possible by proposing the houses as far from the wetland boundary as possible. Because the proposal cannot avoid all impacts to the wetland buffer, mitigation in the form of buffer enhancement is proposed. The enhancement plan will involve installation of native plants around the houses after they are constructed to represent as natural a buffer setting as possible. In addition, a line of conifer trees will be installed along the buffer edge to improve the noise and light screening function of the buffer. The mitigation also includes replacement of the culvert under Belfair Avenue currently used as a pedestrian path. Replacement will reconnect historically connected wetland systems on both sides of the road.

Other options for mitigation were explored as part of the project proposed immediately south on Lots 2, 3, and 4 of Soundview Drive. These options included contacting the Bainbridge Island Land Trust to determine whether there were opportunities available for mitigation on properties controlled by the land trust. The land trust determined that they had no avenue for accepting funds or assistance with restoration or enhancement on local properties. The city owned lands adjacent to the lots are also not available for mitigation opportunities. Therefore, the combination mitigation plan was selected for a comparable ratio based on the functional lift achieved by reconnecting the wetlands on both sides of Belfair Avenue hydrologically in addition to onsite buffer enhancement.

BUFFER MITIGATION PLAN

The inner 80 feet of wetland buffer is densely vegetated with Nootka rose and English hawthorn trees that provide a very protective buffer for the depressional wetland. The mitigation plan proposes to focus on increasing species diversity by planting around the future homes and minimizing the cover by the houses. Invasive plant removal will be conducted where feasible and necessary in the dense shrub buffer during implementation of the plan. The native trees, shrubs, and herbaceous plants will be installed around the proposed homes once construction is completed (Figure 10). The split rail fence will be installed at the edge of the reduced buffer following completion of the homes (Figure 10). The existing buffer vegetation is very dense and impenetrable from the future building sites on each lot. The installation of shore pines at the edge of the buffer is intended to provide another level of protection for the wetland from the future homes as well as increase coniferous diversity. The placement of the fence is intended to provide a clear demarcation of the critical area and buffer to prevent continual access by future residents.

The mitigation plan also includes specifications for replacement of the culvert under Belfair Avenue to provide a better hydrologic connection between the wetlands that lie within Fort Ward

Estates. Because of the size and orientation of the lots as well as the condition of the existing buffer vegetation, mitigation options are limited to the areas immediately adjacent to the proposed homes. The limited mitigation options make it difficult to provide a 1:1 ratio that will adequately compensate for the buffer impact. Therefore, a portion of the proposed mitigation will involve replacement of the culvert under Belfair.

Wetland Functional Lift

The wetlands in Fort Ward Estates were historically part of one larger system that upon development of the area were divided into somewhat individual wetlands by roads (Belfair Avenue to the north of these lots and Richardson Street to the northeast). During construction, culverts were placed beneath the roads but the one at Belfair was placed too high in elevation so did not allow the continued flow of water into the northern wetland areas. Due to the lack of hydrological continuity caused by the improperly installed culvert, the original area of wetland south of Belfair Avenue has expanded considerably (Figure 9). It appears that a larger culvert was installed several years ago but it remains slightly higher in elevation than the bottom of the wetland south of Belfair so has not restored hydrologic continuity. The wetland does not appear to have expanded as a result of the new culvert but it has not allowed the wetland to restore to its original limits.

B-twelve Associates, Inc. conducted a delineation of the wetlands within Fort Ward Estates in 1992. The boundary identified in 1992 is significantly smaller than the boundary identified by Wiltermood Associates, Inc. (Wiltermood) in 2006. The boundary identified during the 2006 delineation is located east of the 2017 boundary indicating that the wetland had expanded between 1992, 2006, and 2017 site visits. These early delineation maps show the wetland south of Belfair was smaller than it is currently further indicating that the culvert did not permit the wetland to remain in its historic configuration and that this area of wetland was physically and hydrologically disconnected from the other wetlands.

By improving the connection between the onsite wetland and the wetlands to the north, there will be improvements in hydrologic connectivity, wildlife passage, and increased diversity within the northern wetlands. When water is allowed to spread across both wetlands there will be an increase in the ability of each wetland to function as one system for water quality improvement and water quantity storage. It is recommended that the culvert be at least 24 inches across and is either partially buried or bottomless. This will improve wildlife connectivity between the wetlands and allow small animals such as frogs to move across the historic range. The wetland north of Belfair Avenue is dominated by a dense community of soft rush. The increase in plant species diversity as a result of seed sources reaching more areas will improve the water quality of the runoff that enters the wetlands. The onsite wetland has greater plant species diversity and once the culvert is replaced, the seeds from these plants will spread into the northern wetlands and thereby increase the vegetation diversity.

Replacing the culvert will involve construction activities to occur very near and partially in the wetlands. However, one construction is complete; the area will return to pre-construction conditions and begin improving as discussed above. Vegetation along Belfair Avenue is dominated by Himalayan blackberry and the soils are composed of densely compacted gravel. The work will only impact the soils on Belfair Avenue and will avoid disturbance of wetland soils to the extent possible. The result of culvert replacement may shrink the boundary of the wetland over time, however it will not shrink beyond its original boundary as delineated in 1992 (Figure 9).

Despite the potential for shrinking, the water quality and habitat functional lifts associated with culvert replacement outweigh the potential loss of area.

Buffer Functional Lift

The existing buffer is densely vegetated by native trees and shrubs that are for the most part deciduous. There are few if any conifer tree species in the buffer because of the dense nature of the deciduous shrubs. The buffer has high functions because of the dense shrubs but lacks diversity because there are only a few plant species including Nootka rose, hardhack, and hawthorn. Planting of native vegetation around the future homes will increase the vegetation diversity as well as provide additional screening function to the existing buffer vegetation. Shore pines will be planted along the edge of the buffer to further improve the function of the buffer vegetation. The trees will be especially beneficial in the winter months after the deciduous shrubs and small trees lose their leaves. Therefore, the installation of conifer trees will increase the function of the buffer as well as the diversity of the plants within the buffer.

Stormwater Assessment

The stormwater generated on the developed lots will be somewhat mitigated by planting native trees and shrubs around each proposed home as well as through the use of LID methods that will minimize the impact to water quality and quantity issues in the wetlands. Pervious pavement will be used to allow stormwater to infiltrate, rather than runoff and pick up pollutants. Most of the water generated on the developed lots will be on rooftops and because it is considered clean water, it can be discharged toward the wetland buffer via splash blocks. The water will receive additional filtration through the densely vegetated buffer area as well as the native plantings around each home. Therefore, the proposed homes will not impose any new or additional water quality impacts to the wetlands. Although it appears because of the development, that there will be an increase in the water generated onsite and discharged into the wetland. Because the lots are composed of dense silt loam and silty clay loam that have become compacted over a long period of time, they basically represent impervious surfaces. For this reason, the homes will represent a replacement of impervious surfaces and will not result in a significant increase the quantity of water generated on these lots. In addition, the replacement of impervious surfaces will ensure that the wetland receives the same amount of water that it does currently and will not result in a significant reduction in the source of water. Replacement of the culvert at an appropriate elevation will establish a connection with the northern wetlands, which will result in each wetland providing adequate storage and release of water.

Specifications for Site Preparation

The tasks listed below will achieve the wetland buffer mitigation goals and objectives. These tasks are listed in the order they are anticipated to occur; however, some tasks may occur concurrently or may precede other tasks due to site and procedural constraints.

Buffer Enhancement Area

1. Stake or flag the proposed planting areas to precisely identify where invasives will be removed and native plants installed.
2. Remove existing invasive vegetation from the wetland buffer prior to installation of the native plants.
3. Install plantings according to the schedule and specifications proposed herein.

Goals, Objectives, and Performance Standards

Project Goal: Improve wetland buffer functions to compensate for buffer reduction.

Objective 1: Control invasive species.

Performance Standard 1(a): During Years 1 through 7, invasive species will be removed and suppressed in all onsite portions of the buffer as often as necessary to meet a performance standard of no greater than 10 percent cover by invasive species. Percent cover will be recorded annually and included in monitoring reports.

Objective 2: Improve native plant cover within the native shrub buffer community.

Performance Standard 2(a): The project will maintain 100 percent survival of installed plants during the entire 7-year monitoring period. Plant species number will be recorded annually and compared with as-built conditions for inclusion in yearly monitoring reports.

Objective 3: Increase native plant cover within the buffer and around the existing homes.

Performance Standard 3(a): There will be increasing cover by native plant species in the enhanced wetland buffer over the 7-year monitoring period.

The yearly percent cover in the areas around the house shall be:

- Year 1 - 15 to 20 percent by native volunteer and installed plants
- Year 2 - 20 to 25 percent by native volunteer and installed plants
- Year 3 - 25 to 30 percent by native volunteer and installed plants
- Year 5 – 40 to 50 percent by native volunteer and installed plants
- Year 7 - 50 to 60 percent by native volunteer and installed plants

Plant species percentages will be recorded annually and compared with as-built conditions to determine overall success of the plantings.

Performance Standard 3(b): Shore pines grow relatively slowly so the cover is expected to increase slowly over the seven year monitoring period. The trees shall be monitored for increasing heights over the monitoring period as follows:

- Year 1-up to 1.5 feet tall
- Year 2-up to 2.5 feet tall
- Year 3-up to 3.5 feet tall
- Year 5-up to 5 feet tall
- Year 7-up to 6 feet tall

Tree height will be recorded annually and compared with as-built conditions to determine overall success of the plantings.

Objective 4: Improve connectivity of wetland habitat in Fort Ward Estates.

Performance Standard 4(a): Plant species from either side of Belfair Avenue will mingle between the two portions of Wetland A and the larger culvert will encourage the passage of wildlife. Observations on the north and south side, as well as within, the new culvert will be made during each monitoring site visit and any actual or evident use by wildlife will be recorded.

Specifications for Planting

The plants specified for installation are intended to diversify the existing plant community and improve wetland buffer function. The plants proposed around the future homes will allow the homes to be situated within a vegetated buffer dominated by native species, which improve the function of the buffer as well as minimizing the impacts to the overall buffer area. The shore pines grow relatively slowly, and if maintained, will form a natural hedge of conifers that will provide additional noise and light screening from the future homes. Their installation is intended to improve upon the ground-level buffer function by increasing the density of conifer trees alongside the existing native shrub community. The proposed location of the plants is presented in the mitigation planting plan (Figure 10).

Plant Materials

Potted Stock

1. 1 and 2-gallon potted plants will be purchased from a native plant nursery.
2. Potted stock will have a minimum size of 1.5 to 3 feet tall.
3. Potted stock will be kept in a shaded area prior to being planted.
4. The potted stock will have well-developed roots and sturdy stems with an appropriate root- to-shoot ratio.
5. No damaged or desiccated roots or diseased plants will be accepted.
6. Unplanted stock will be properly stored at the end of each planting day to prevent desiccation.
7. The project biologist will be responsible for inspecting potted stock prior to and during planting and culling unacceptable plant materials.

Planting Specifications

Removal of invasive plants can begin at any time following issuance of the permits by the city and planting will take place during the winter months when the plants are dormant. Plants will be installed as roughly indicated on the attached planting plan (Figure 10) or in small groupings to mimic the natural environment and to enhance species survival. Table 1 provides a list of plants proposed for installation within the buffer based on the square footage of the planting areas. Plantings will be spaced to allow for removal of invasive plants and each planting may be protected by weed mat or similar product to prevent the re-growth of invasive plants.

Table 1. Plant specifications for buffer mitigation area.

Species Name	Spacing (feet from center)	Minimum Size	Quantity
Shore pine (*Pinus contorta contorta*)	10	2-gallon, potted	15
Vine maple (*Acer circinatum*)	10-15	Bareroot	10
Mock orange (*Philadelphus lewisii*)	8	Bareroot	10
Pacific rhododendron (*Rhododendron*	6	1-gallon, potted	12

macrophyllum)			
Tall Oregon grape (*Mahonia aquifolium*)	8	Bareroot	16
Salal (*Gaultheria shallon*)	5	Bareroot	20
Evergreen huckleberry (*Vaccinium ovatum*)	6	Bareroot	12
Sword fern (*Polystichum munitum*)	3	Bareroot	26
Low Oregon grape (*Mahonia nervosa*)	3	Bareroot	28
False Solomon's seal (*Smilacina racemosa*)	3	Bareroot	20
American dog violet (*Viola labridorica*)	1	4" pot	20
Beach strawberry (*Fragaria chiloensis*)	1	4" pot	15
Wood sorrel (*Oxalis oregana*)	1	4" pot	20
		Total Plantings	**224**

Planting Methods

1. Plant the specified trees in the winter 2018-2019 (or subsequent winter) or after construction activities are completed, as listed in Table 1. Planting after construction is completed is recommended to avoid impacting the plants during construction. Space the trees roughly 10 feet apart along the edge of the buffer and just inside the split-rail fence. Plant the trees with a tree shovel or comparable tool.
2. Place the trees in the planting holes so that their roots are able to extend down entirely and do not bend upward or circle inside the hole.
3. Position the root crowns so that they are at, or slightly above, the level of the surrounding soil.
4. Firmly compact the soil around the planted species to eliminate air spaces.
5. Install anti-herbivory devices, such as seedling protection tubes or mesh protection netting, around the stems of planted species when appropriate, and secure them with stakes.
6. Irrigate all newly installed plants as site and weather conditions warrant.

MAINTENANCE

Maintenance of the planting areas will occur for seven years and will involve removing invasive plant species, irrigating planted species, and reinstalling failed plantings, as necessary. The maintenance may include the following activities:

1. Remove and control non-native and/or invasive vegetation from within the wetland buffer a minimum of two times during the growing season for the first five years.
2. Irrigate planted species as necessary during the dry season, approximately July 1 through October 15. ELS biologists recommend that watering occur at least every two weeks

during the dry season for the first three years. The most successful method of watering plants is using a temporary above-ground irrigation system set to a timer to ensure the plants are regularly watered.

3. Replace dead or failed plants as described for the original installation to meet the minimum annual survival rate and percent cover performance standards.

MONITORING PLAN

The buffer mitigation areas will be monitored annually for a 7-year period following plant installation. Monitoring reports will be submitted to the City of Bainbridge Island by December 31 of each monitored year. The goal of monitoring is to determine if the previously stated performance standards are being met. The buffer mitigation area will be monitored once during the growing season, preferably during the same two-week period each year to better compare the data. During the first annual monitoring and maintenance event, representative monitoring photo stations will be selected to provide yearly photos of the planted area. The entirety of the planted area will be monitored each year and no individual monitoring units will be established.

Vegetation

Vegetative monitoring will document the development of the natural evergreen hedge along the edge of the buffer as well ass plantings between the homes. The following information will be collected in the planted area:

- Height and survival of installed trees.
- Species composition of herbs, shrubs, and trees, including non-native, invasive species.
- Photo documentation of vegetative changes over time.

Fauna

General observations will be recorded and photographs will be taken of wildlife during site visits to the site for monitoring. Observations of insects and other invertebrates, amphibians, reptiles, fish, birds, and mammals will be recorded and documented in the annual monitoring reports. Use of the on-site buffer areas by any priority species also will be noted.

Monitoring Report Contents

The annual monitoring reports will contain at least the following:

- Location map and representational drawing.
- Historic description of project, including dates of plant installation, current year of monitoring, and restatement of goals, objectives, and performance standards.
- Description of monitoring methods.
- Documentation of plant cover and overall development of plant communities.
- Assessment of non-native, invasive plant species and recommendations for management.
- Observations of wildlife, including, amphibians, invertebrates, reptiles, birds, and mammals
- Photographs from permanent photo points.
- Summary of maintenance and contingency measures proposed for the next season and completed for the past season.

CONTINGENCY PLAN

If the performance standards are not met by the seventh year following project completion, or at an earlier time if specified above, a contingency plan will be developed and implemented. All contingency actions will be undertaken only after consulting and gaining approval from the City of Bainbridge Island. The applicant will be required to complete a contingency plan that describes (1) the causes of failure, (2) proposed corrective actions, (3) a schedule for completing corrective actions, and (4) whether additional maintenance and monitoring are necessary. Yearly plant replacement will be conducted if the survival rate falls below 100 percent during the monitoring year.

SITE PROTECTION

The enhanced buffer area will be owned, maintained, and managed by the landowners, unless such responsibilities are assigned to another entity. The owners will be responsible for maintenance and monitoring of the planting areas for the prescribed 7-year period.

LIMITATIONS

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

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

REFERENCES

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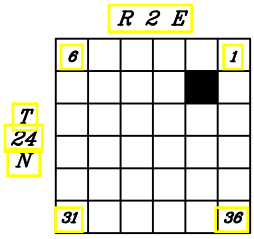
FIGURES AND PHOTOPLATES

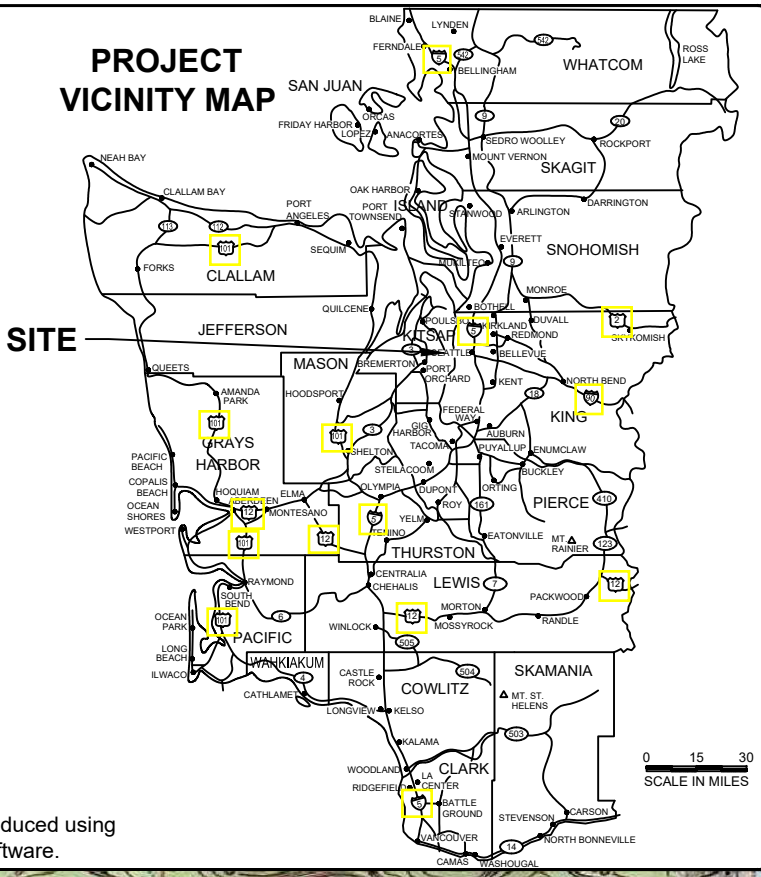
47.5834° Latitude
-122.5215° Longitude

LOCATION MAP



NOTE:
USGS topographic quadrangle map reproduced using MAPTECH Inc., Terrain Navigator Pro software.

PROJECT VICINITY MAP



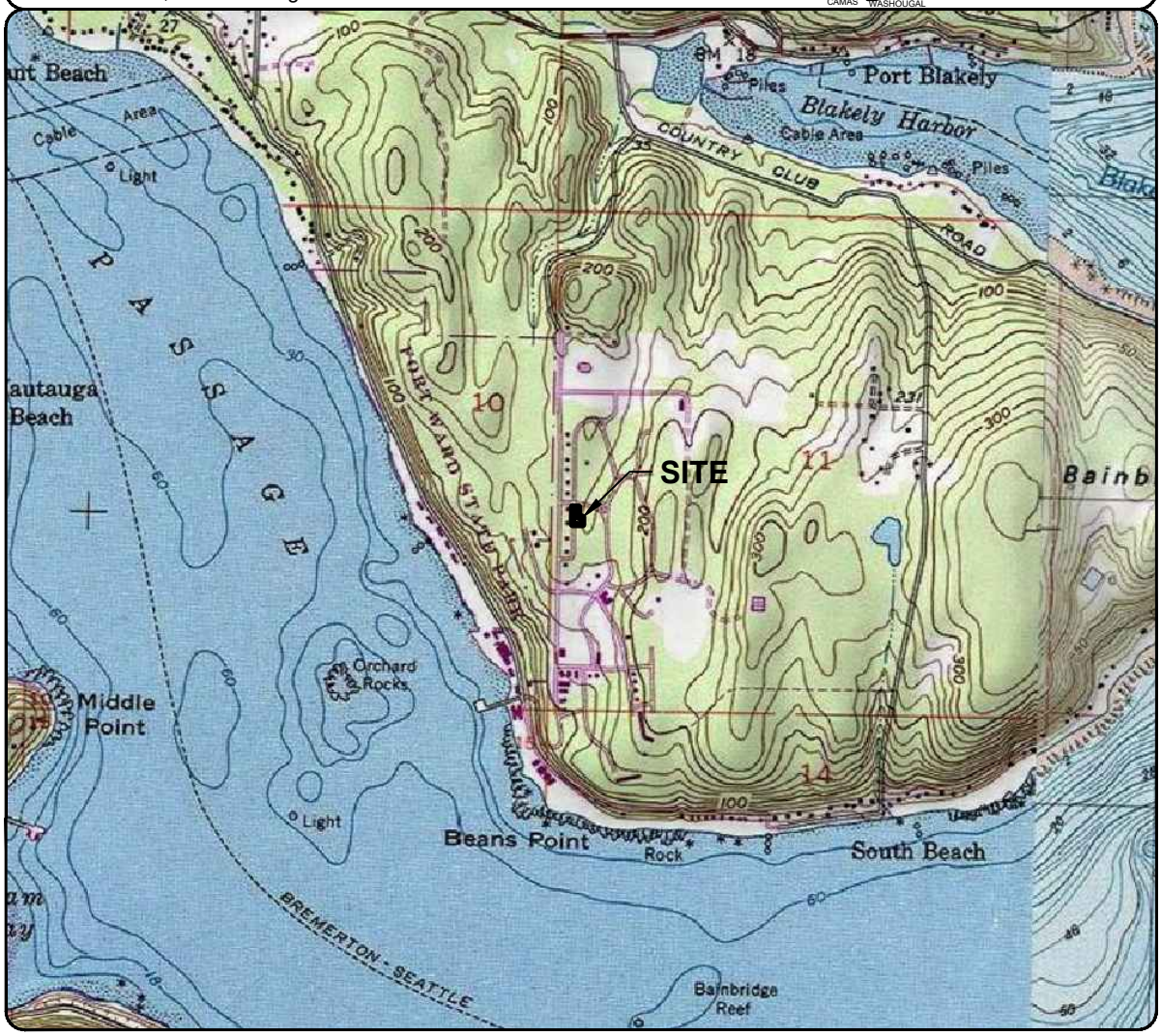


Figure 1
VICINITY MAP
Fort Ward Lots 5 & 6 RUE
Julian Prossor
City of Bainbridge Island, Kitsap County, WA
Section 11, Township 24N, Range 2E, W.M.

DATE: 1/17/18
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PRJ. MGR: JB
CHK:
PROJECT NO: 2405.01

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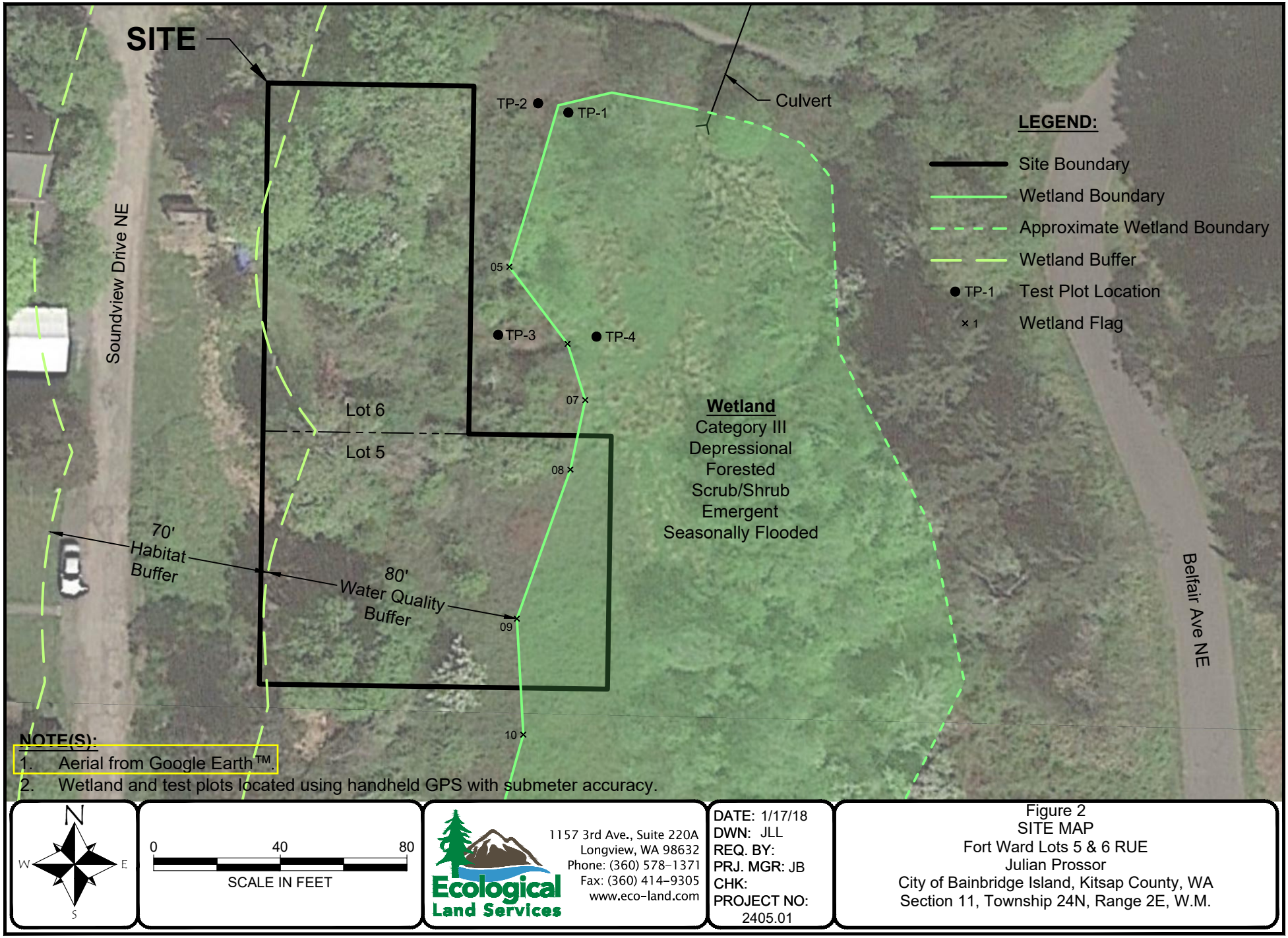

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Figure 2
SITE MAP
Fort Ward Lots 5 & 6 RUE
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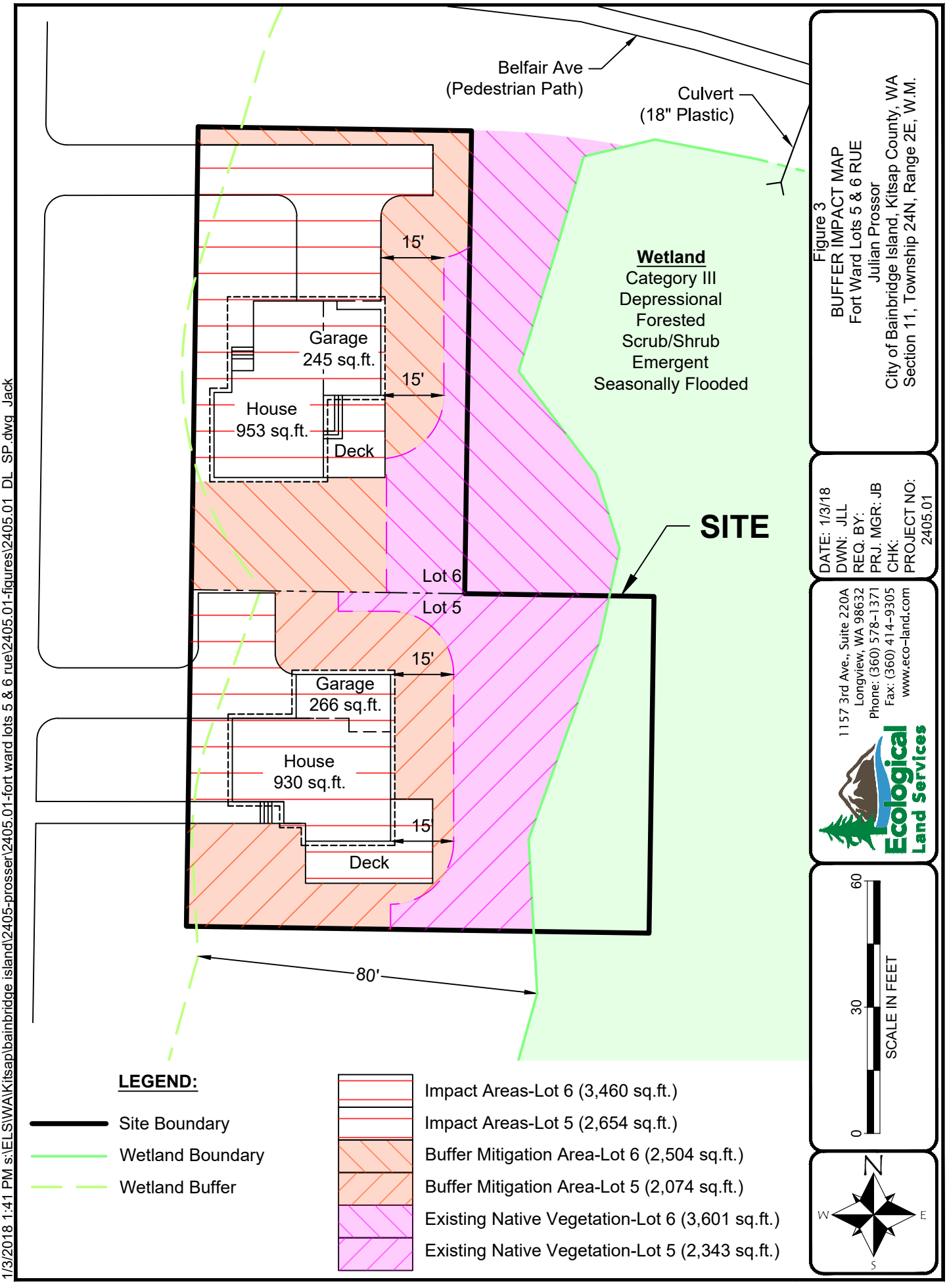
City of Bainbridge Island, Kitsap County, WA
Section 11, Township 24N, Range 2E, W.M.



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LEGEND:

7 Cathcart silt loam, 2 to 8 percent slopes. Not hydric.

NOTE(S):

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

Figure 4
SOIL SURVEY MAP
Fort Ward Lots 5 & 6 RUE
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City of Bainbridge Island, Kitsap County, WA
Section 11, Township 24N, Range 2E, W.M.

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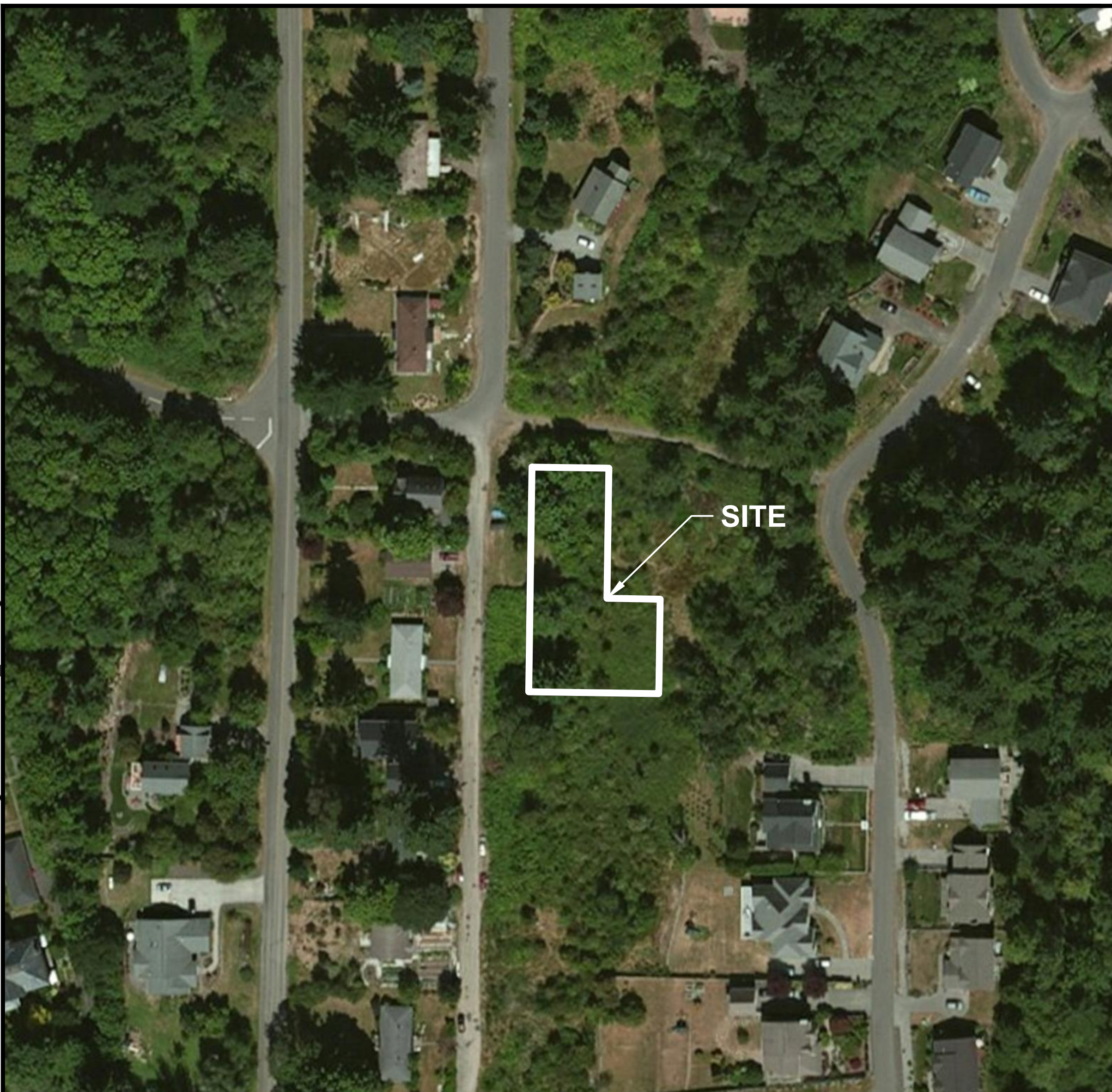

No mapped wetlands indicated onsite by US Fish & Wildlife Service.

NOTE(S):

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

Figure 5
NATIONAL WETLANSD INVENTORY MAP
Fort Ward Lots 5 & 6 RUE
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City of Bainbridge Island, Kitsap County, WA
Section 11, Township 24N, Range 2E, W.M.

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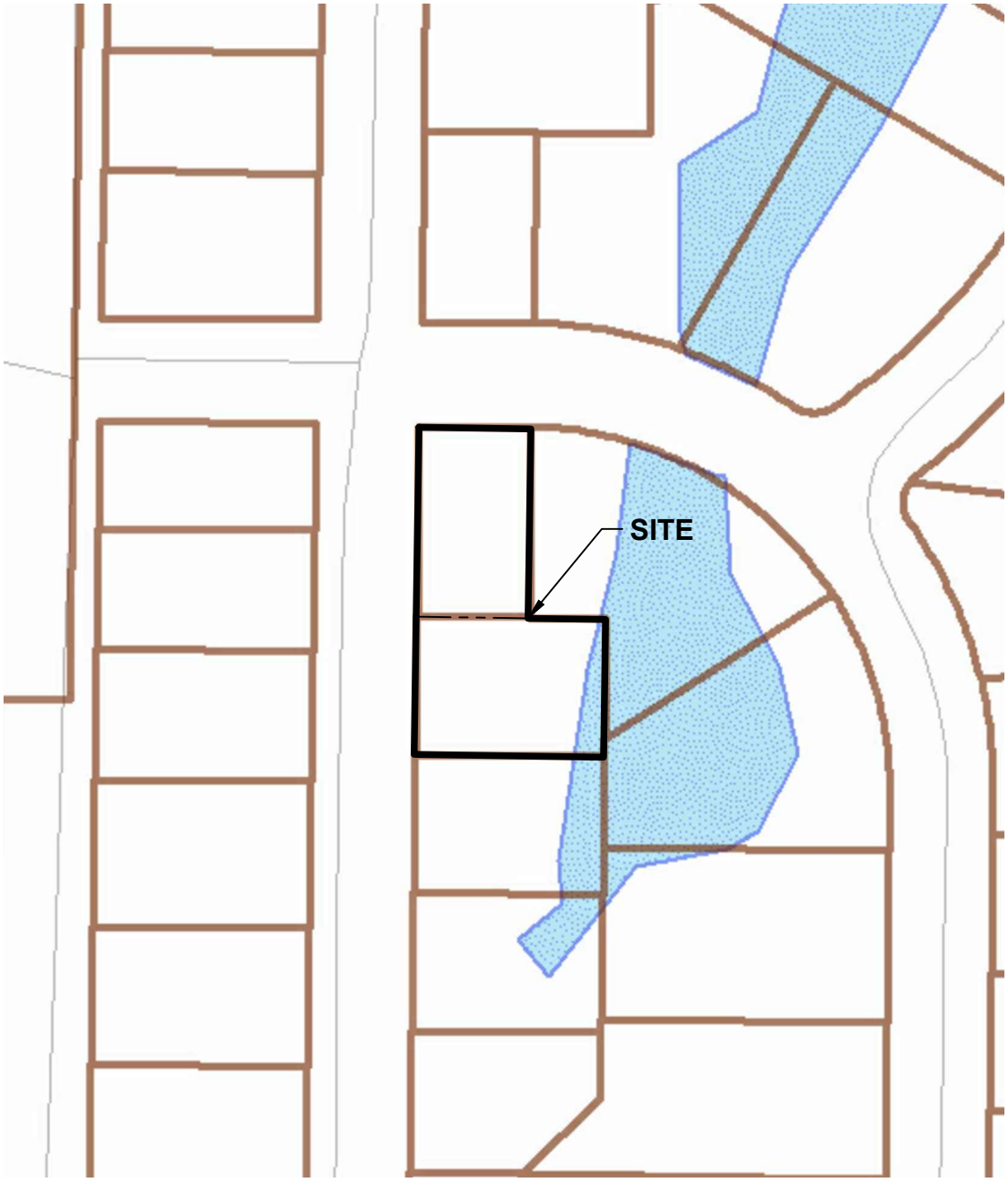

LEGEND:

Wetlands

NOTE(S):

1. Map provided on-line by the City of Bainbridge Island at web address: *http://apps.bainbridgewa.gov:8080/PublicGIS/*

Figure 6
BAINBRIDGE ISLAND CRITICAL AREAS MAP
Fort Ward Lots 5 & 6 RUE
Julian Prossor
City of Bainbridge Island, Kitsap County, WA
Section 11, Township 24N, Range 2E, W.M.

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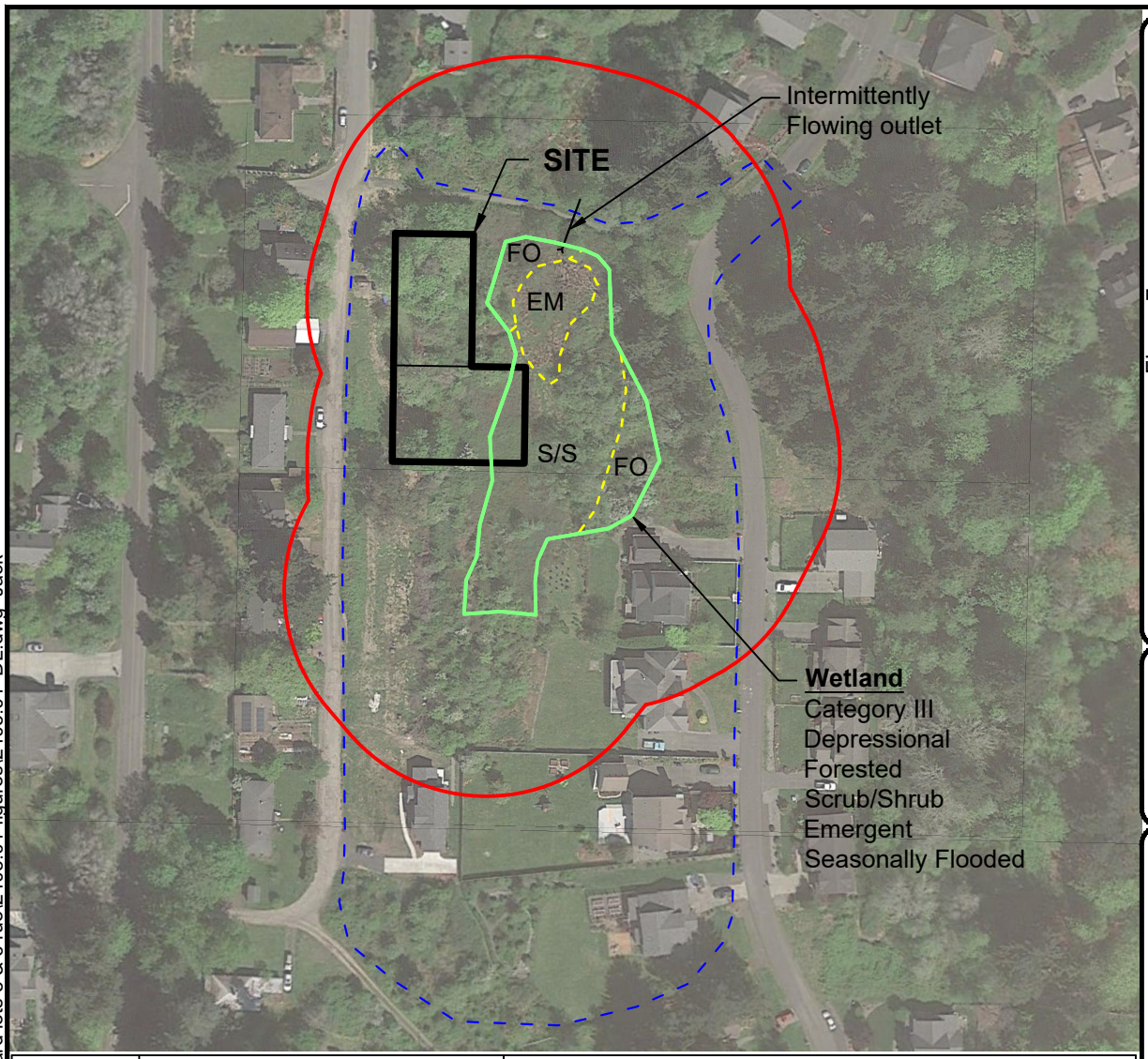

Rating Question	Description	Answers specific to Wetland being rated
D 1.1, D 4.1	Location of Outlet	Wetland has an intermittently flowing outlet
D 1.3	Distribution of persistent plants	Persistent, ungrazed plants > ½ of the area
D. 1.4	Area of seasonally flooded	Area seasonally ponded > ½ of the wetland
D 2.2	Boundary of area w/in 150' of the wetland in land uses that generate pollutants	>10% of the area within 150' in land uses that generate pollutants
D 5.2	Boundary of area w/in 150' of the wetland in land uses that generate excess runoff	> 10% of the area within 150 feet in land uses that generate excess runoff
D 4.3	Contributing Basin- Contribution of wetland to storage in the watershed	Area of the basin is less than 10 times the area of the wetland
D 5.3	Contributing Basin covered in intensive land uses	>25% of the basin is covered in intensive human land uses
H 1.1	Cowardin Plant Classes	Emergent, Scrub/Shrub, Forested
H 1.2	Hydroperiods	Seasonally flooded
H 1.4	Interspersion of habitats	Moderate Interspersion of habitat

LEGEND:

- Wetland Unit Boundary
- Vegetation Class Division
- Contributing Basin
- 150' Wetland Offset

S/S Scrub/shrub
FO Forested
EM Emergent

NOTE(S):

1. Aerial photo from Google Earth™.

Figure 7
WETLAND RATING FORM-150' OFFSET
Fort Ward Lots 5 & 6 RUE
Julian Prossor
City of Bainbridge Island, Kitsap County, WA
Section 11, Township 24N, Range 2E, W.M.

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Figure 8
WETLAND RATING FORM-1 KM OFFSET
Fort Ward Lots 5 & 6 RUE
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Section 11, Township 24N, Range 2E, W.M.

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LEGEND:

- Wetland Unit Boundary
- Contributing Basin
- A — Accessible Habitat (0.1%)
- U — Undisturbed Habitat (12.0% *Includes Accessible Habitat)
- H — High Intensity Land Use (33.9%)
- M/L — Moderate/Low Intensity Land Use (54.1%)

H 2.1 - Accessible habitat < 10% of 1 km Polygon (0.1%).
H 2.2 - Undisturbed habitat 10-50% and > 3 patches (39.1%).
H 2.3 - ≤ 50% of polygon is high land use intensity.

NOTE(S):
1. Aerial photo from Google Earth™.

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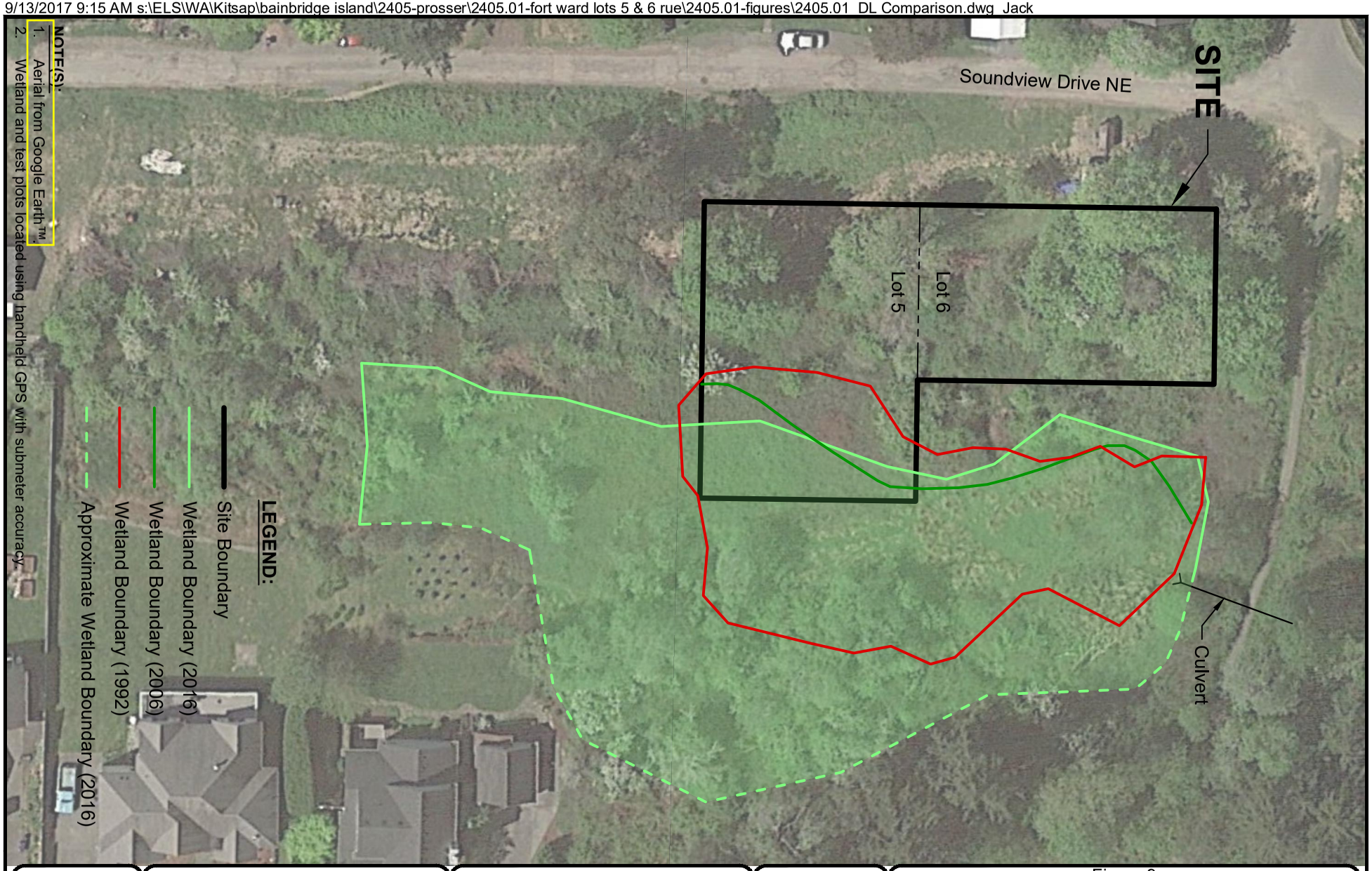

NOTE(S):
1. Aerial from Google Earth™.
2. Wetland and test plots located using handheld GPS with submeter accuracy.

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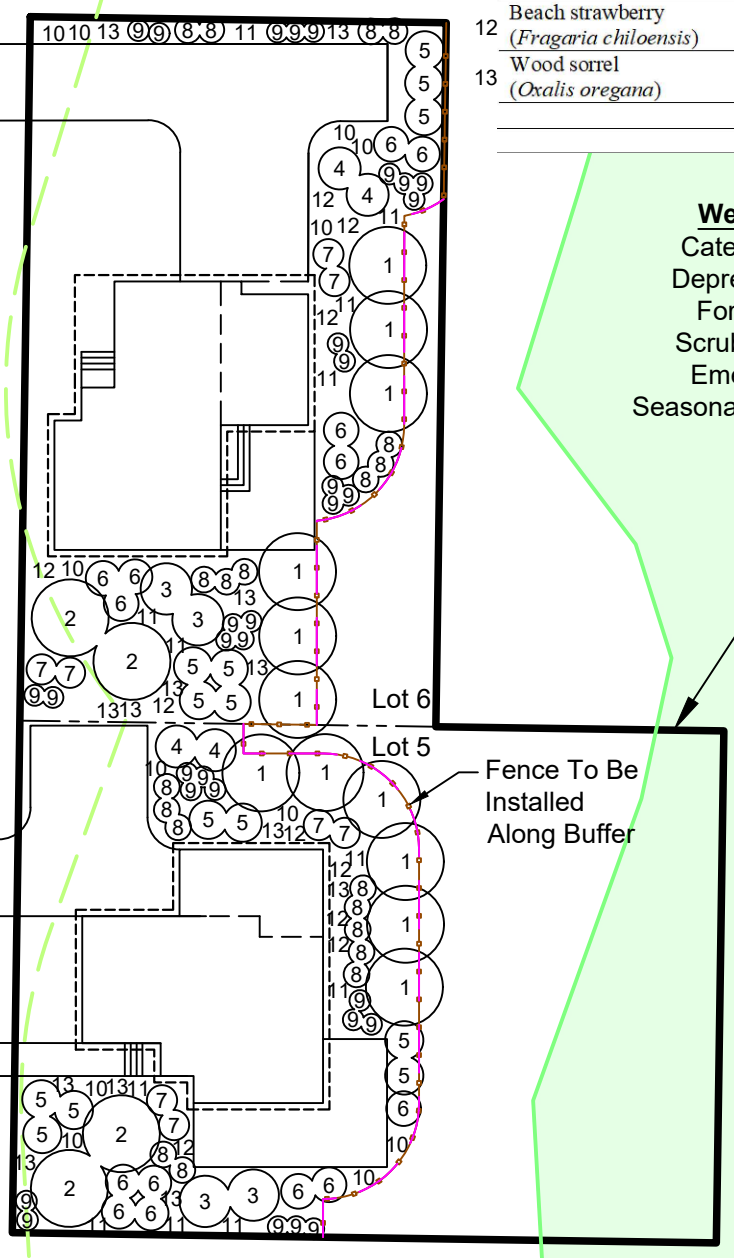
Figure 9
WETLAND COMPARISON MAP
Fort Ward Lots 5 & 6 RUE
Julian Prossor
City of Bainbridge Island, Kitsap County, WA
Section 11, Township 24N, Range 2E, W.M.

LEGEND:

- Site Boundary
- Wetland Boundary
- Wetland Buffer

	Species Name	Spacing (feet from center)	Minimum Size	Quantity
1	Shore pine (*Pinus contorta contorta*)	10	2-gallon, potted	15
2	Vine maple (*Acer circinatum*)	10-15	Bareroot	10
3	Mock orange (*Philadelphus lewisii*)	8	Bareroot	10
4	Pacific rhododendron (*Rhododendron macrophyllum*)	6	1-gallon, potted	12
5	Tall Oregon grape (*Mahonia aquifolium*)	8	Bareroot	16
6	Salal (*Gaultheria shallon*)	5	Bareroot	20
7	Evergreen huckleberry (*Vaccinium ovatum*)	6	Bareroot	12
8	Sword fern (*Polystichum munitum*)	3	1 gallon	26
9	Low Oregon grape (*Mahonia nervosa*)	3	Bareroot	28
10	False Solomon's seal (*Smilacina racemosa*)	3	4" pot	20
11	American dog violet (*Viola labridorica*)	1	4" pot	20
12	Beach strawberry (*Fragaria chiloensis*)	1	4" pot	15
13	Wood sorrel (*Oxalis oregana*)	1	4" pot	20
			Total Plantings	**224**



Wetland
Category III
Depressional
Forested
Scrub/Shrub
Emergent
Seasonally Flooded

SITE

Figure 10
MITIGATION PLAN OVERVIEW
Fort Ward Lots 5 & 6 RUE
Julian Prossor
City of Bainbridge Island, Kitsap County, WA
Section 11, Township 24N, Range 2E, W.M.

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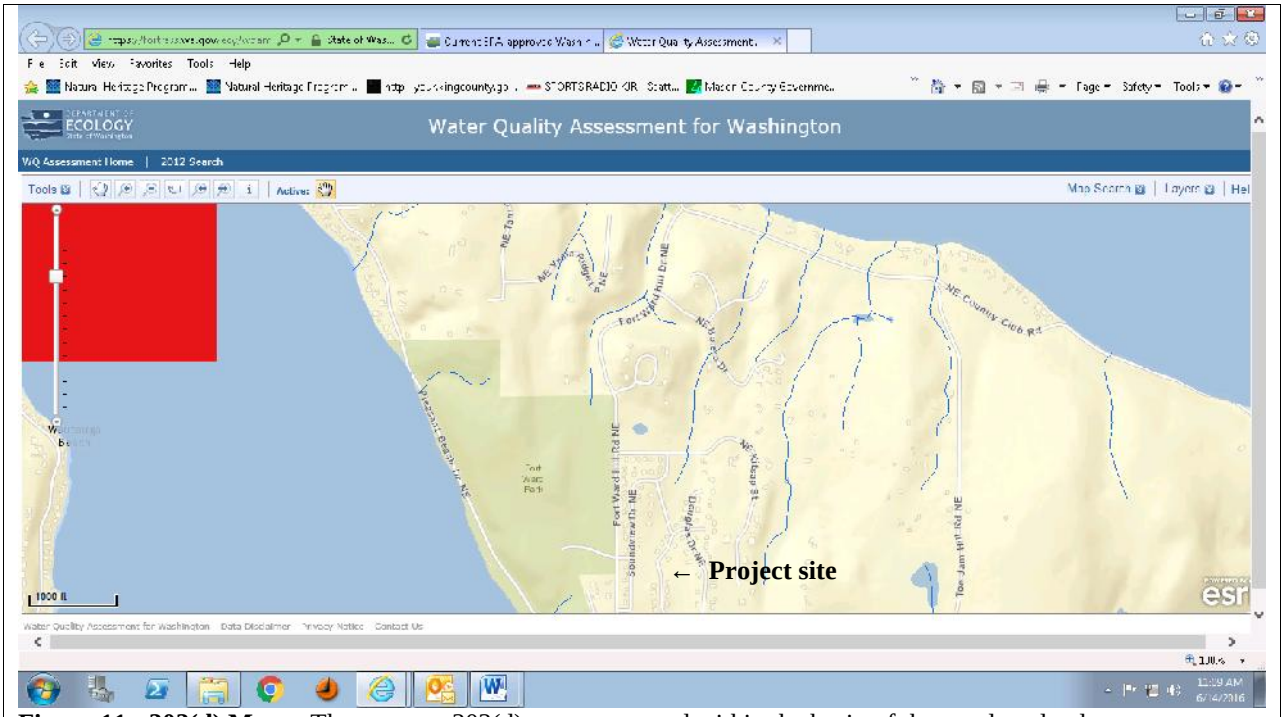

Figure 11a-303(d) Map: There are no 303(d) waters mapped within the basin of the rated wetland.

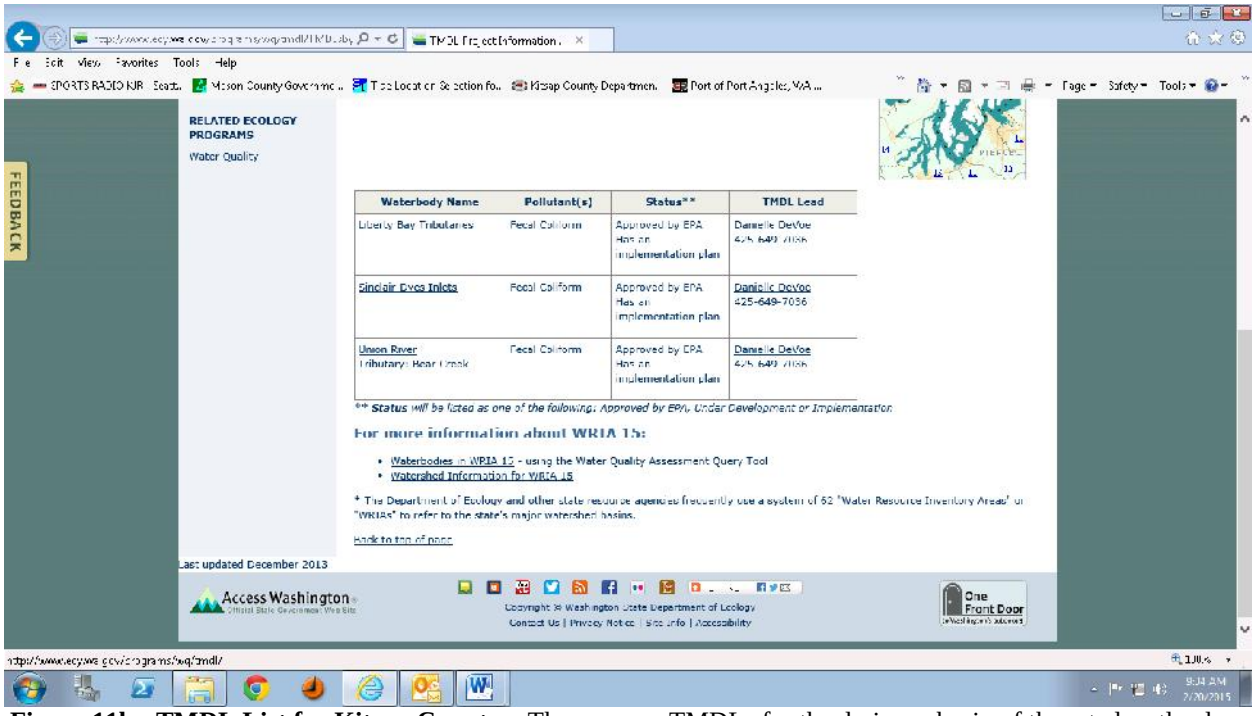

Figure 11b: TMDL List for Kitsap County. There are no TMDLs for the drainage basin of the rated wetland.

Ecological Land Services	1157 3rd Ave., Suite 220A Longview, WA 98632 Phone: (360) 578-1371 Fax: (360) 414-9305	DATE: 6/14/16 DWN: JB PRJ. MGR JB PROJ.#: 2405.01	**Figure 11-Wetland Rating Figure-303(d)/TMDL** Project Name: Fort Ward Lots 5 and 6 Client: Prosser Kitsap County, Washington

Photo 1 was taken from the northwest corner of Lot 5 facing east. It looks down Belfair Avenue, which is an unimproved right-of-way that is currently used as a pedestrian path. This path borders the north property boundary of Lot 5.

Photo 2 was taken from the same location as Photo 1 and looks southeast at the upland vegetation that occurred near the mowed, level area of Lot 5.

Photo 3 was taken from the same location as Photos 1 and 2 facing south. It shows some of the boats that had been parked on the Soundview Drive right of way, which is currently unimproved. This Soundview Drive NE lies to the right of the frame.

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Photoplate 1
Project Name: Fort Ward Lots 5 & 6
Client: Julian Prosser
Kitsap County, Washington

Photo 4 was taken near the middle of the mown area on the west side of Lot 5 facing north. It looks at the same boats pictured in Photo 3 (Photoplate 1).

Photo 5 was taken from the same location as Photo 4 and looks east at the upland vegetation and another example of the neighbors using the vacant lots.

Photo 6 was taken from the same location as Photos 4 and 5 facing south. It looks at the thick shrub layer that began at the boundary of Lots 5 and 6 and continued to the southern boundary of Lot 6.

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Photoplate 2
Project Name: Fort Ward Lots 5 & 6
Client: Julian Prosser
Kitsap County, Washington

Photo 7 was taken from the northern extent of Wetland A facing southeast. It demonstrates the vegetation that was growing in this area of wetland.

Photo 8 was taken from the same location as Photo 7 and looks south at the wetland vegetation. This portion of Wetland A was emergent only.

Photo 9 was taken from the same location as Photos 7 and 8 facing west. It looks toward the forested portion of Wetland A, which was dominated by pacific willows.

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Photoplate 3
Project Name: Fort Ward Lots 5 & 6
Client: Julian Prosser
Kitsap County, Washington

Photo 10 was taken of the culvert that outlets Wetland A to the north. It was positioned at the very north end of the wetland and conveys water under the pedestrian path picture in Photo 1 (Photoplate 1).

Photo 11 was taken of the area where Test Plot 1 was conducted. It was located inside the northern wetland boundary where the vegetation was thick with tall shrubs.

Photo 12 was taken of the area where Test Plot 2 was conducted. It was located upslope of Test Plot 1 in the forested upland.

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Photoplate 4
Project Name: Fort Ward Lots 5 & 6
Client: Julian Prosser
Kitsap County, Washington

Photo 13 was taken of the area where Test Plot 3 was conducted. It was located in an open area of upland west of the boundary.

Photo 14 was taken of the area where Test Plot 4 was conducted. It was located inside the western wetland boundary where the vegetation was dominated by emergent species.

Photo 15 was taken from the middle of the wetland facing north. Test Plot 4 is visible in the foreground and the forested portion from Photo 11 (Photoplate 4) is visible in the background.

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Photoplate 5
Project Name: Fort Ward Lots 5 & 6
Client: Julian Prosser
Kitsap County, Washington

Photo 16 was taken from the same location as Photo 15 (Photoplate 5) facing east. It shows the emergent portion of the wetland in the foreground and the forested portion in the background.

Photo 17 was taken from the same location as Photos 15 and 16 facing southeast. The center of the depression had no woody vegetation present.

Photo 18 was taken from the same location as Photos 15, 16, and 17 facing west. It looks towards the thick shrub area of Wetland A.

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PRJ. MGR JB
PROJ.#: 2405.01

Photoplate 6
Project Name: Fort Ward Lots 5 & 6
Client: Julian Prosser
Kitsap County, Washington

APPENDIX A

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

Project Site: Fort Ward Estates Lots 5 & 6 City/County: Bainbridge/Kitsap Sampling Date: 6-10-16

Applicant/Owner: Julian Prosser State: WA Sampling Point: TP 1

Investigator(s): J. Bartlett, L. Westervelt Section, Township, Range: S 11 T 24N R 2EWM

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 1-3%

Subregion (LRR): MLRA 2 Lat: _____ Long: _____ Datum: Trimble

Soil Map Unit Name: 7 Cathcart silt loam, 2 to 8 percent slopes NWI classification: _____

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

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

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: Wetland A is a depressional system composed of a thick shrub layer having some forested and emergent areas. Test Plot 1 was located at the northwest corner of the wetland boundary where the vegetation was forested with three layers.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 20' diameter)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	____	____
2. _____	_____	____	____
3. _____	_____	____	____
4. _____	_____	____	____
50% = _____, 20% = _____	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 20' diameter)			
1. *Spiraea douglasii*	35	yes	FACW
2. *Rosa nutkana*	20	yes	FAC
3. *Salix lucida ssp. lasiandra*	15	no	FACW
4. *Crataegus monogyna*	15	no	FAC
5. *Ilex aquifolium*	10	no	FACU
50% = 47.5, 20% = 19	95	= Total Cover	
Herb Stratum (Plot size: 5' diameter)			
1. *Athryium filix-femina*	20	yes	FACW
2. *Ranunculus repens*	10	yes	FACW
3. *Geum macrophyllum*	10	yes	FAC
4. *Polystichum munitum*	5	no	FACU
5. *Equisetum arvense*	5	no	FAC
6. _____	_____	____	____
7. _____	_____	____	____
8. _____	_____	____	____
9. _____	_____	____	____
10. _____	_____	____	____
11. _____	_____	____	____
50% = 25, 20% = 10	50	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____	_____	____	____
2. _____	_____	____	____
50% = _____, 20% = _____	_____	= Total Cover	

% Bare Ground in Herb Stratum 50

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks: The hydrophytic vegetation criterion is met because there is greater than 50% dominance by FAC and FACW species.

Project Site: Fort Ward Estates Lots 5 & 6

SOIL

Sampling Point: TP 1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/1	100					silty cl loam	no redoximorphic features
8-10	10 YR 2/1	95	10YR 3/6	5	C	M	silty cl loam	
10-16	10YR 4/2	90	10YR 4/6	10	C	M	clay loam	
								cl clay

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks: This soil profile contains a depleted layer beginning within 10 inches and is at least 6 inches thick, therefore the soil profile meets hydric soil indicator F3, Depleted Matrix.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	_____
Water Table Present?	Yes	☐	No	☒	Depth (inches):	_____
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	_____

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

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

Remarks: Hydrology was not present during the site visit but there was evidence to indicate wetland hydrology present as a sparsely vegetated concave surface and the occurance of oxidized rhizospheres along living roots.

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

Project Site: Fort Ward Estates Lots 5 & 6 City/County: Bainbridge/Kitsap Sampling Date: 6-10-16

Applicant/Owner: Julian Prosser State: WA Sampling Point: TP 2

Investigator(s): J. Bartlett, L. Westervelt Section, Township, Range: S 11 T 24N R 2EWM

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 1-3%

Subregion (LRR): MLRA 2 Lat: _____ Long: _____ Datum: Trimble

Soil Map Unit Name: 7 Cathcart silt loam, 2 to 8 percent slopes NWI classification: UPL

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

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

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: The upland surrounding Wetland A was composed of a very thick shrub layer having some forested areas. Test Plot 2 was located in the forested area outside of the northwest boundary of Wetland A in conjunction with wetland Test Plot 1.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 20' diameter)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
50% = _____, 20% = _____	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 20' diameter)			
1. *Rosa nutkana*	50	yes	FAC
2. *Crataegus monogyna*	20	yes	FAC
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
50% = 35, 20% = 14	70	= Total Cover	
Herb Stratum (Plot size: 5' diameter)			
1. *Polystichum munitum*	35	yes	FACU
2. *Rubus ursinus*	15	no	FACU
3. *Veronica americana*	15	no	OBL
4. *Equisetum arvense*	10	no	FAC
5. *Tellima grandiflora*	5	no	FACU
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
50% = 40, 20% = 16	80	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
50% = _____, 20% = _____	_____	= Total Cover	

% Bare Ground in Herb Stratum 20

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	67	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks: The hydrophytic vegetation criterion is met because there is greater than 50% dominance by FAC species.

Project Site: Fort Ward Estates Lots 5 & 6

SOIL

Sampling Point: TP 2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	100					silt loam	No redoximorphic features
10-16	10 YR 4/2	100					silt loam	No redoximorphic features

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks: This soil profile contains a depleted layer, however, Cathcart silt loam is mapped on the entire site, which is described as having a parent material made of volcanic ash and is therefore naturally grey in color.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

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

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

Remarks: Hydrology was not present during the site visit and there was no evidence to indicate wetland hydrology.

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

Project Site: Fort Ward Estates Lots 5 & 6 City/County: Bainbridge/Kitsap Sampling Date: 6-10-16

Applicant/Owner: Julian Prosser State: WA Sampling Point: TP 3

Investigator(s): J. Bartlett, L. Westervelt Section, Township, Range: S 11 T 24N R 2EWM

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 1-3%

Subregion (LRR): MLRA 2 Lat: _____ Long: _____ Datum: Trimble

Soil Map Unit Name: 7 Cathcart silt loam, 2 to 8 percent slopes NWI classification: UPL

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

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

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: The upland surrounding Wetland A was composed of a very thick shrub layer having some forested areas. Test Plot 3 was located in the forested area outside of the west boundary of Wetland A in conjunction with wetland Test Plot 4.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 20' diameter)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
50% = _____, 20% = _____		= Total Cover	
Sapling/Shrub Stratum (Plot size: 20' diameter)			
1. *Rosa nutkana*	20	yes	FAC
2. *Crataegus monogyna*	20	yes	FAC
3. *Rubus armeniacus*	15	yes	FAC
4. *Rubus laciniatus*	5	no	FACU
5. _____			
50% = 30, 20% = 12	60	= Total Cover	
Herb Stratum (Plot size: 5' diameter)			
1. *Holcus lanatus*	35	yes	FAC
2. *Dactylis glomerata*	25	yes	FACU
3. *Rubus ursinus*	20	no	FACU
4. *Lotus corniculatus*	20	no	FAC
5. *Juncus effusus*	15	no	FACW
6. *Polystichum munitum*	10	no	FACU
7. *Equisetum arvense*	5	no	FAC
8. *Ranunculus repens*	5	no	FACW
9. *Geum macrophyllum*	5	no	FACU
10. _____			
11. _____			
50% = 70, 20% = 28	140	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____			
2. _____			
50% = _____, 20% = _____		= Total Cover	
% Bare Ground in Herb Stratum 0			

Dominance Test Worksheet:

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

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks: The hydrophytic vegetation criterion is met because there is greater than 50% dominance by FAC species.

Project Site: Fort Ward Estates Lots 5 & 6

SOIL

Sampling Point: TP 3

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	100					gr si loam	No redoximorphic features
10-16	10 YR 4/2	100					gr si loam	No redoximorphic features
								gr gravelly
								si silt

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks: This soil profile contains a depleted layer, however, Cathcart silt loam is mapped on the entire site, which is described as having a parent material made of volcanic ash and is therefore naturally grey in color.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	_____
Water Table Present?	Yes	☐	No	☒	Depth (inches):	_____
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	_____

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

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

Remarks: Hydrology was not present during the site visit and there was no evidence to indicate wetland hydrology.

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

Project Site: Fort Ward Estates Lots 5 & 6 City/County: Bainbridge/Kitsap Sampling Date: 6-10-16

Applicant/Owner: Julian Prosser State: WA Sampling Point: TP 4

Investigator(s): J. Bartlett, L. Westervelt Section, Township, Range: S 11 T 24N R 2EWM

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 1-3%

Subregion (LRR): MLRA 2 Lat: _____ Long: _____ Datum: Trimble

Soil Map Unit Name: 7 Cathcart silt loam, 2 to 8 percent slopes NWI classification: PFOC

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

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

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: Wetland A was a depressional system composed of a thick shrub layer having some forested and emergent areas. Test Plot 4 was located in the emergent portion of Wetland A near the west wetland boundary line.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 20' diameter)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
50% = _____, 20% = _____		= Total Cover	
Sapling/Shrub Stratum (Plot size: 20' diameter)			
1. *Rubus armeniacus*	10	yes	FAC
2. _____			
3. _____			
4. _____			
5. _____			
50% = 5, 20% = 2	10	= Total Cover	
Herb Stratum (Plot size: 5' diameter)			
1. *Ranunculus repens*	75	yes	FACW
2. *Equisetum arvense*	25	no	FAC
3. *Vicia americana*	20	no	FAC
4. *Holcus lanatus*	15	no	FAC
5. *Juncus effusus*	15	no	FACW
6. *Athryium filix-femina*	10	no	FACW
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = 80, 20% = 32	160	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____			
2. _____			
50% = _____, 20% = _____		= Total Cover	
% Bare Ground in Herb Stratum 0			

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks: The hydrophytic vegetation criterion is met because there is greater than 50% dominance by FAC and FACW species.

Project Site: Fort Ward Estates Lots 5 & 6

SOIL

Sampling Point: TP 4

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	100					silt loam	no redoximorphic features
6-11	10 YR 2/1	95	10YR 3/6	5	C	PL	silty cl loam	
11-16+	10YR 4/2	85	10YR 5/8	15	C	M	clay loam	
								cl clay

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks: This soil profile contains a depleted layer at least 6 inches thick, therefore the soil profile meets hydric soil indicator F3, Depleted Matrix.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	_____
Water Table Present?	Yes	☐	No	☒	Depth (inches):	_____
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	_____

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

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

Remarks: Hydrology was not present during the site visit but there was evidence to indicate wetland hydrology present as glistening in the soil.

APPENDIX B

Wetland name or number A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Date of site visit: 9-13-16

Rated by J. Bartlett Trained by Ecology? X Yes ___No Date of training 11/14

HGM Class used for rating Depressional Wetland has multiple HGM classes? __Y X N

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

Source of base aerial photo/map Google Earth/COBI Critical Areas Map

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

1. Category of wetland based on FUNCTIONS

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

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

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

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

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
		Circle the appropriate ratings		
Site Potential	H **M** L	H **M** L	H **M** L	
Landscape Potential	H **M** L	**H** M L	H **M** L	
Value	H M **L**	H **M** L	H M **L**	**TOTAL**
Score Based on Ratings	5	7	5	17

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	**I** **II**
Wetland of High Conservation Value	**I**
Bog	**I**
Mature Forest	**I**
Old Growth Forest	**I**
Coastal Lagoon	**I** **II**
Interdunal	**I** **II** **III** **IV**
None of the above	**X**

Wetland name or number A

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	**2, 6**
Hydroperiods	D 1.4, H 1.2	**2, 6**
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	**2, 6**
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	**6**
Map of the contributing basin	D 4.3, D 5.3	**6**
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	**7**
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	**8**
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	**8**

Riverine Wetlands

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

Lake Fringe Wetlands

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

Slope Wetlands

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

Wetland name or number A

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Wetland name or number A

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

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

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

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

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

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

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

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

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

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

Wetland name or number A

DEPRESSIONAL AND FLATS WETLANDS

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

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	**2**
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions).* Yes = 4 No = 0	**0**
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > ½ of area points = 3 Wetland has persistent, ungrazed plants > $^1/_{10}$ of area points = 1 Wetland has persistent, ungrazed plants < $^1/_{10}$ of area points = 0	**3**
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	**4**
Total for D 1 Add the points in the boxes above	**9**

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

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

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

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

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

Wetland name or number A

DEPRESSIONAL AND FLATS WETLANDS

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

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

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

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

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

D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	**1**
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	**1**
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	**1**
Total for D 5 Add the points in the boxes above	**3**

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

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

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

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

Wetland name or number A

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

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

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

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

If the unit has a Forested class, check if:

____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

2

H 1.2. Hydroperiods

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

____Permanently flooded or inundated — 4 or more types present: points = 3
__X__Seasonally flooded or inundated — 3 types present: points = 2
____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**

0

H 1.3. Richness of plant species

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

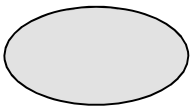
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

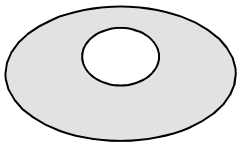
1

H 1.4. Interspersion of habitats

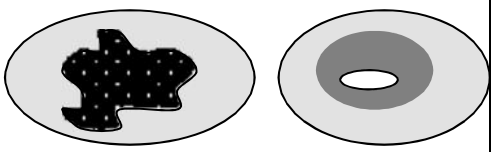
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



None = 0 points

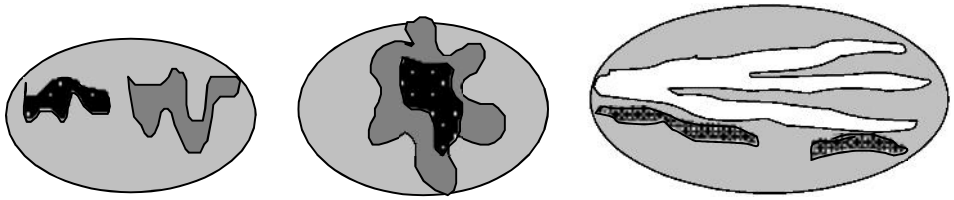


Low = 1 point



Moderate = 2 points

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



2

Wetland name or number A

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ____Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ____Standing snags (dbh > 4 in) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* X At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* X Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	**2**
Total for H 1 Add the points in the boxes above	**7**

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 0.1 **+** [(% moderate and low intensity land uses)/2] 0 **= 0.1** % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	**0**
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 12 **+** [(% moderate and low intensity land uses)/2] 27 **= 39.1** % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	**1**
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	**0**
Total for H 2 Add the points in the boxes above	**1**

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

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

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

Site meets ANY of the following criteria: points = 2

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

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

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

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

Wetland name or number A

WDFW Priority Habitats

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Wetland name or number A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

Wetland name or number A

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

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