

**WETLAND INVENTORY UPDATE
YEAR 11 SYNTHESIS REPORT
2015**



December 2015
Water Resources Division
Lummi Natural Resources Department
Lummi Indian Business Council

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LUMMI NATION

**WETLAND INVENTORY UPDATE
YEAR 11 SYNTHESIS REPORT
2015**

**Prepared for:
Lummi Indian Business Council (LIBC)**

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**Prepared by:
Water Resources Division
Lummi Natural Resources Department
and
Northwest Ecological Services, LLC**

**Authors:
Molly Porter, PWS, Northwest Ecological Services
Frank Lawrence III, LIBC Natural Resources Specialist**

**Contributors:
Gerry Gabrisch, GISP, GIS Manager
Jeremy Freimund, P.H., LIBC, Water Resources Manager**

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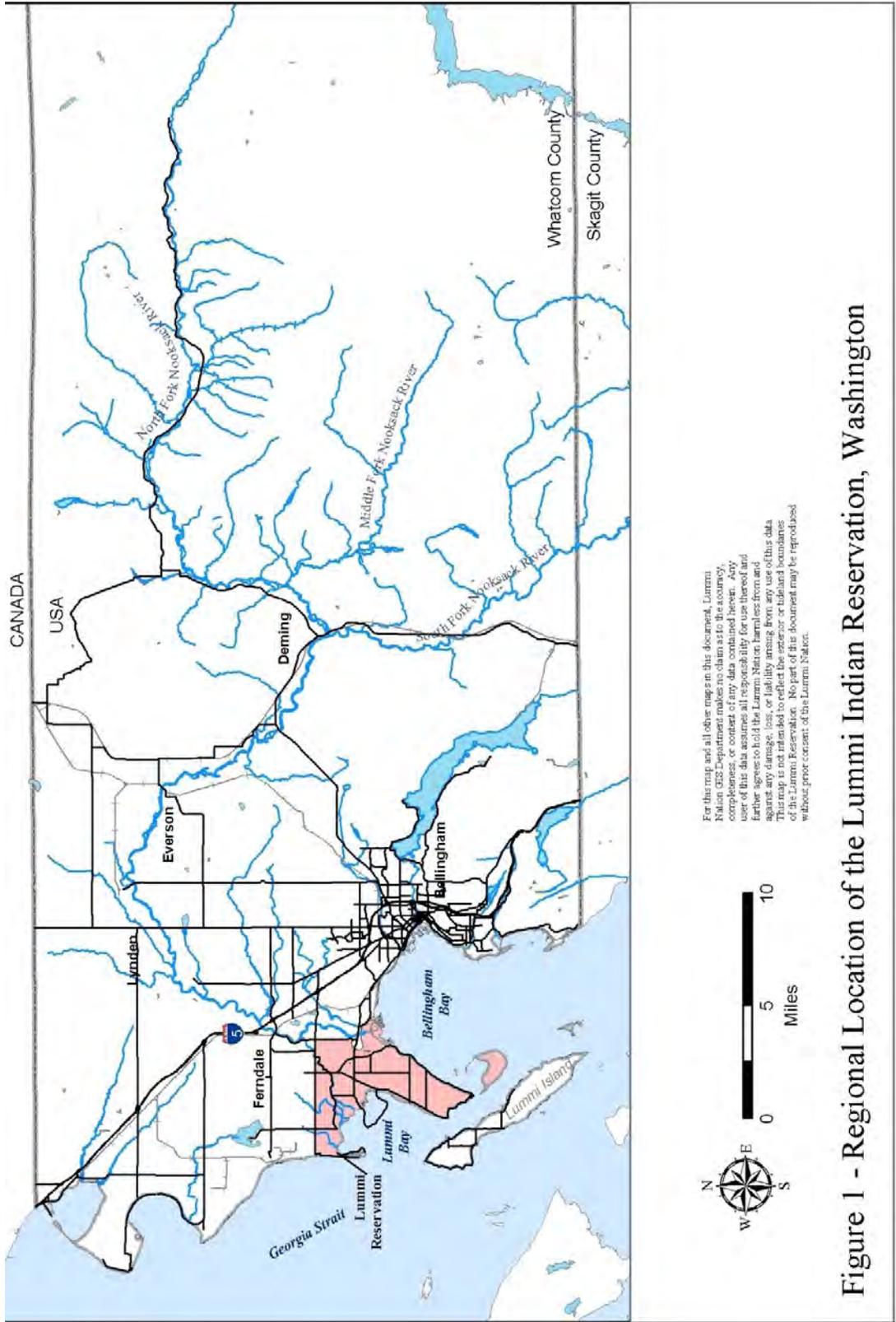
1.0 INTRODUCTION

The Lummi Indian Reservation (Reservation) is located along the western boundary of Whatcom County, Washington and includes the mouth of the Nooksack and Lummi Rivers (Figure 1). Both the Nooksack and Lummi River Watersheds are under environmental pressures from rapid regional growth. The Lummi Nation has also entered a period of rapid economic development under self-governance. Growth on and near the Reservation requires that the Nation's core environmental program prioritize the development of a regulatory infrastructure that is technically sound, legally defensible, and administratively efficient and allows for growth while protecting tribal resources and the Reservation environment. This regulatory infrastructure supports both the tribal goal and the Environmental Protection Agency (EPA) policy of tribal self governance and recognition of sovereignty.

Previous EPA and other funding sources have supported the Lummi Nation's assessment of priority water resource needs and the identification of unmet needs. Environmental planning intended to protect the Nation's water resources has included development of a Storm Water Management Program (Lummi Water Resource Division [LWRD] 1998a, LWRD 2011b), a Wellhead Protection Program (LWRD 1997, LWRD 1998b, LWRD 2011c), a Wetland Management Program (LWRD 2000), a Non-Point Source Management Program (LWRD 2001, LWRD 2002), and Water Quality Standards for Surface Waters of the Lummi Indian Reservation (LWRD 2008). These programs are components of a comprehensive water resources management program (CWRMP) being developed and implemented pursuant to Lummi Indian Business Council (LIBC) resolutions No. 90-88 and No. 92-43.

In January 2004, the Lummi Nation Water Resources Protection Code (Title 17 of the Lummi Code of Laws [LCL]) was adopted. Based on a Reservation-wide wetland inventory completed in 1999 (Harper 1999) and as described in Chapter 17.06 (Stream and Wetland Management) of LCL Title 17, different types of wetlands that vary in their quality and importance occur on the Reservation. In order to establish appropriate levels of protection, pursuant to LCL Chapter 17.06 the Reservation wetlands must be classified into one of four categories. Lummi Administrative Regulation (LAR) 17 LAR 06 identifies methodologies to evaluate Reservation wetlands.

Category 1 wetlands are considered critical value wetlands that have a high and irreplaceable level of importance for fisheries, Lummi culture, and/or water quality on the Reservation. Category 2 wetlands are wetlands that do not meet the Category 1 criteria but are high value wetlands that perform important ecological or hydrologic functions. Category 3 wetlands provide a moderate level of functions and are often less diverse. Category 4 wetlands have minimum habitat value and are suitable for restoration or enhancement efforts.



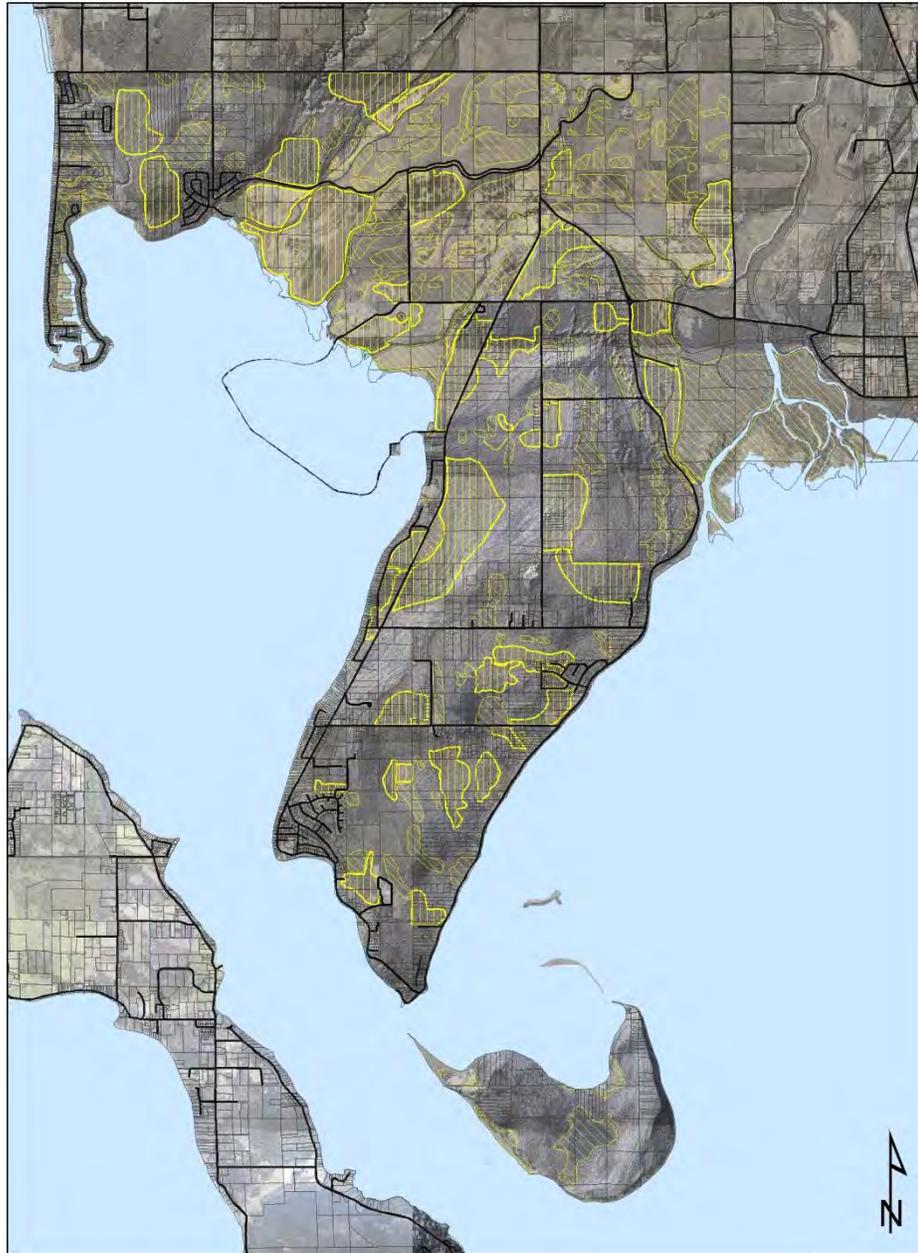
The purpose of the 1999 Reservation-wide wetland inventory was to identify wetland locations and to collect information on the characteristics and functions of the Reservation wetlands. The 1999 Reservation-wide wetland inventory (Harper 1999) relied largely on remotely sensed data (i.e., color and infra-red aerial photographs), generalized mapping (i.e., USDA soil survey), and limited field verification to identify wetland locations and sizes. In addition to identification and mapping, the 1999 inventory collected general wetland information including Cowardin classification (Cowardin et al. 1979), water source, and soil type. The Washington State Function Assessment Method (WFAM) was applied to 12 assessment units (AUs) in 9 selected wetlands on the Reservation. The 1999 inventory identified and mapped a total of 214 wetlands and wetland complexes on the Reservation (Figure 2). These wetland areas totaled 5,432 acres, or roughly 43 percent of the land area of the Reservation, excluding tidelands. Approximately 60 percent of these mapped wetland areas were located in the flood plains of the Lummi and Nooksack rivers.

Although the 1999 inventory represents an important planning tool and a significant improvement over the previously available information, which was largely from the National Wetlands Inventory (NWI) (USFWS 1987), the 1999 inventory has proven to be too general for many planning efforts. The 1999 inventory either did not map some wetlands or generally shows larger wetland areas than are surveyed in the field or identified using Global Positioning System (GPS) technology.

The inventory update effort is focused on refining the spatial resolution of wetland mapping, performing function assessments, and classifying the wetlands into the regulatory categories identified in Title 17. The wetland inventory update is intended to support efforts to protect these wetland resources and the important ecological, hydrological, and water quality protection functions they provide. Because of the large number of wetland areas on the Reservation, the effort to refine the spatial resolution of the wetland mapping, to perform function assessments, and to classify the Reservation wetlands was projected to require several years to complete.

Year 1 of the wetland inventory update effort was 2005. During the planning stages for this update effort, it was estimated that approximately 70 wetlands could be evaluated during one year (approximately three days per wetland). This estimate proved to be overly optimistic due to a number of factors including property access issues and the remoteness and size of some of the wetlands. There were also seasonal considerations including long periods of flooding, frozen ground, and snow that limited and/or prevented wetland boundary determination during portions of the winter season. During the summer season, mapping forested wetland areas is problematic because GPS satellite signals are often difficult to obtain through the dense tree canopy.

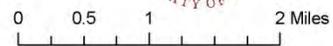
Figure 2 - 1999 Wetland Inventory Results



Estimated Wetlands - 1999

-  Wetland
-  Wetland Complex
-  Parcels

Lummi Nation makes no claim as to the accuracy, completeness, or content of any data contained herein. This map is not intended to reflect the extent of land boundaries of the Lummi Reservation. All warranties of fitness for a particular purpose and of merchantability are hereby disclaimed.



As described in more detail below, a wetland-consulting firm was contracted following Year 3 of the update effort to provide an independent program evaluation and quality assurance/quality control review. As a result of this evaluation and review, the functional assessment element of the wetland inventory update effort was deemphasized during Year 4. The consultant recommended functional assessments be deferred for wetlands until a development activity is imminent and the assessment is needed to determine appropriate mitigation measures for any unavoidable wetland impacts.

As a result of the independent program evaluation and review, starting in Year 4 (2008) the inventory update consists of conducting a site visit(s), performing a detailed reconnaissance-level delineation, using a mapping grade GPS unit to map the approximate location of the identified wetland boundaries, collecting representative data samples in wetland and upland locations, and classifying the wetlands into one of the four Lummi wetland categories.

This report summarizes the results of Year 11 of this inventory update effort. The results from Year 1 through Year 10 of the update effort are summarized in similar synthesis reports (LWRD 2005, LWRD 2006, LWRD 2007, LWRD 2009, LWRD 2010, LWRD 2011, LWRD 2012, LWRD 2013, and LWRD 2014 [2014 a and b]). In total, 25 wetlands were identified as part of this Year 11 effort. When combined with the 277 wetlands identified during Year 1 through Year 10 of the inventory update, a total of 302 wetlands have been evaluated as part of the inventory update effort. This total is more than the 214 wetlands identified on the Reservation during the 1999 inventory. As described in more detail below, the increase in the number of wetlands is due to the more detailed fieldwork which resulted in the identification of additional wetlands and splitting of previous wetland polygons into more accurate smaller polygons. To date, the area covered in the inventory update is approximately 50 percent of the Reservation land (not including tidelands).

2.0 METHODS FOR WETLAND INVENTORY UPDATE

The methods used to update and refine the spatial resolution of the 1999 inventory are described below. Lummi Water Resources Division staff and consulting firms hired by the Lummi Planning Department, the Lummi Housing Authority, the Lummi Tribal Sewer and Water District, and/or the Lummi Natural Resources Department collected and interpreted the field data summarized in this Year 11 wetland inventory update report.

Three interrelated methods were used to update and refine the 1999 inventory. The different methods were used for wetland mapping/boundary determination, wetland rating/classification, and updating the Lummi Nation GIS wetland inventory/database.

2.1 Method for Wetland Mapping/Boundary Determination

Properties evaluated during the current inventory year were chosen based on development applications and/or potential for development. Because of property access issues and the remoteness and size of some of the Reservation wetlands, it is not

practical to undertake a geography-based approach (i.e., watershed by watershed). Instead, the parcels evaluated during this inventory update were based on areas with a high probability of development, areas being considered for purchase, areas where field conditions were appropriate for obtaining an accurate wetland boundary for the season, parcels for which Lummi Land Use Permit Applications were submitted to the Lummi Planning Department, and/or parcels where a development project has recently or is currently occurring.

In several cases, the inventory update was completed only within the confines of a single parcel or portion of a parcel. Many of these parcels were identified in the 1999 inventory as containing large wetlands or wetland complexes located over multiple contiguous parcels. Because acquiring landowner permission is time consuming, particularly for undivided parcels in trust status that may have in excess of 100 landowners, in many cases only a portion of the wetland was mapped. As a result, there are several wetlands and numerous fragments of wetlands that have been mapped by Lummi Water Resources Division staff during the last several years. Whenever possible, staff attempted to identify the wetland boundary to the limits of the parcel boundaries. These wetland areas are mapped and appear in Figure 3 and Figure 4. Completion of the updated wetland boundaries and classification/ratings has not yet been performed due to time constraints, adverse weather, and/or other reasons. These areas have been archived in the Lummi Nation Geographic Information System (GIS) so that work can continue on these wetlands and mapping, function assessments, and categorization can be finalized in the future as this wetland inventory update is completed.

Once a wetland from the 1999 inventory or a land parcel was selected for evaluation, the methodology used to reliably identify and map the wetland boundaries was as follows:

1. Prior to conducting a field visit, available remotely sensed data including high resolution aerial photography collected during 2004, 2008, 2010, and 2013 (approximately 0.5 feet resolution) and high-resolution (approximately ± 0.5 feet accuracy) topographic information acquired in 2005 using Light Detection and Ranging (LiDAR) technology were reviewed. Maps developed as part of the USDA soil survey for the area (USDA 1992) were also reviewed.
2. Information developed during the 1999 wetland inventory (if available), including watershed name and size, wetland size, Cowardin classes present, and USDA soil units in the vicinity were reviewed.
3. During the field visit(s), one of the following two methods for determining wetland boundaries was used:
 - Delineation Level Method. If development activities were planned that would potentially impact wetlands, or a jurisdictional determination of the wetland boundary was required, the wetland boundary was delineated in the field

using the criteria and methodology from the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) and in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (COE 2010). The manuals require examination of three parameters: vegetation, soils, and hydrology. This methodology requires evidence of at least one positive wetland indicator for each of the three parameters (vegetation, soils, and hydrology) to make a positive wetland determination. The specified criteria are mandatory and must all be present under normal environmental conditions. This method was used for wetlands that were adjacent to and associated with a development permit. These wetlands were typically delineated and surveyed by a professional surveyor, and computer aided design (CAD) data were provided to be incorporated into the Lummi GIS Database.

- Reconnaissance Level Method. If development activities were not planned, a “reconnaissance-level” investigation was conducted to identify the approximate wetland boundary. Although the reconnaissance level investigation was conducted with reasonable accuracy, it is less exact than a boundary identification made during a more detailed “delineation” of the precise boundary. Much more time would be required if a formal delineation and jurisdictional determination were made on all the wetlands due to additional data that would need to be acquired. For the reconnaissance level determinations, the same criteria were applied but in a less formal and detailed manner. The wetland boundaries were identified within approximately ± 10 feet and were recorded using a handheld Trimble GeoXT GPS unit, and downloaded into the ArcMap10.1 GIS software program. The horizontal accuracy of the Trimble GeoXT GPS unit is ± 2 feet once the collected data are post-processed. In some cases, only a portion of the wetland edge was recorded using a GPS unit, and the rest of the wetland boundary estimated using a combination of other methods (e.g., aerial photography and LiDAR). In other cases, portions of the wetland boundaries were recorded using a combination of an on-the-ground reconnaissance, GPS data, soil mapping, LiDAR data, and recent aerial photography.

2.2 Method for Wetland Rating/Classification

Pursuant to the Lummi Water Resources Protection Code (LCL Title 17) and 17 LAR 06.030, the Washington State Department of Ecology’s (WDOE) *Wetland Rating System for Western Washington – Revised* (Hruby, 2014) was used to classify all wetlands inventoried for this Year 11 effort.

The wetland classification system was designed to differentiate between wetlands based on their sensitivity to disturbance, their significance, their rarity, the ability to replace them, and the functions they provide. The classification system results in rating wetlands into one of the following four categories:

- Category 1 wetlands are those that represent a unique or rare wetland type, or are more sensitive to disturbance than most wetlands, or are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime, or provide a high level of functions.
- Category 2 wetlands are difficult, though not impossible to replace, and provide high levels of some functions. These wetlands occur more commonly than Category 1 wetlands, but still need a relatively high level of protection.
- Category 3 wetlands provide a moderate level of functions. They have been disturbed in some ways, and are often less diverse or more isolated from other natural resources in the landscape than Category 2 wetlands.
- Category 4 wetlands have the lowest levels of functions and are often heavily disturbed. These are wetlands are most likely to be successfully replaced, and in most cases, improved. These wetlands may provide some important ecological functions, and also need to be protected.

The categories are intended to be the basis for wetland protection and management to reduce further loss of their value as a resource. Some decisions that can be made based on the rating include the width of buffers needed to protect the wetland from adjacent development, the mitigation ratios needed to compensate for impacts to the wetland, and permitted uses in the wetland. The wetland categorization or rating is the basis for determining the size of wetland buffers on the Reservation (LCL Title 17.06.070).

As a component of the rating process, a classification key was used to determine whether the wetland was riverine, depressional, slope, lake-fringe, tidal fringe, or tidal flats according to the hydrogeomorphic (HGM) classification system.

2.3 Method for Updating the Lummi Nation GIS Wetland Inventory/Database

As described in Section 2.1, the updated wetland boundaries were recorded by either a land survey or by using a mapping-grade Trimble GeoXT 6000 GPS unit. All information was entered into ESRI ArcGIS 10.3 GIS software. Once entered into the GIS, any newly identified wetland areas were assigned an identification number corresponding to the update year. A new numbering system, started in Year 7, replaced the old numbering system that was started in 1999 and was based on the Public Land Survey System (Township, Range, and Section). The current numbering system is intended to avoid numbering problems inherent in the old system related to splitting, lumping, and adjusting boundaries previously identified in 1999. Other data that were entered into the GIS database for new wetlands included wetland area in acres and hectares, comments about location or other unique features of the wetland, wetland rating/classification, HGM classification, Cowardin classification, the date the wetland was mapped, and watershed name.

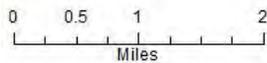
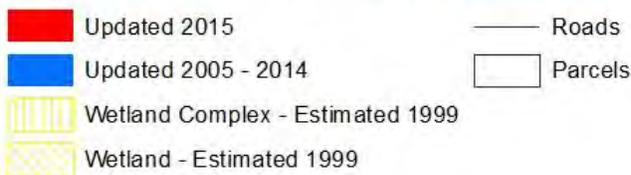
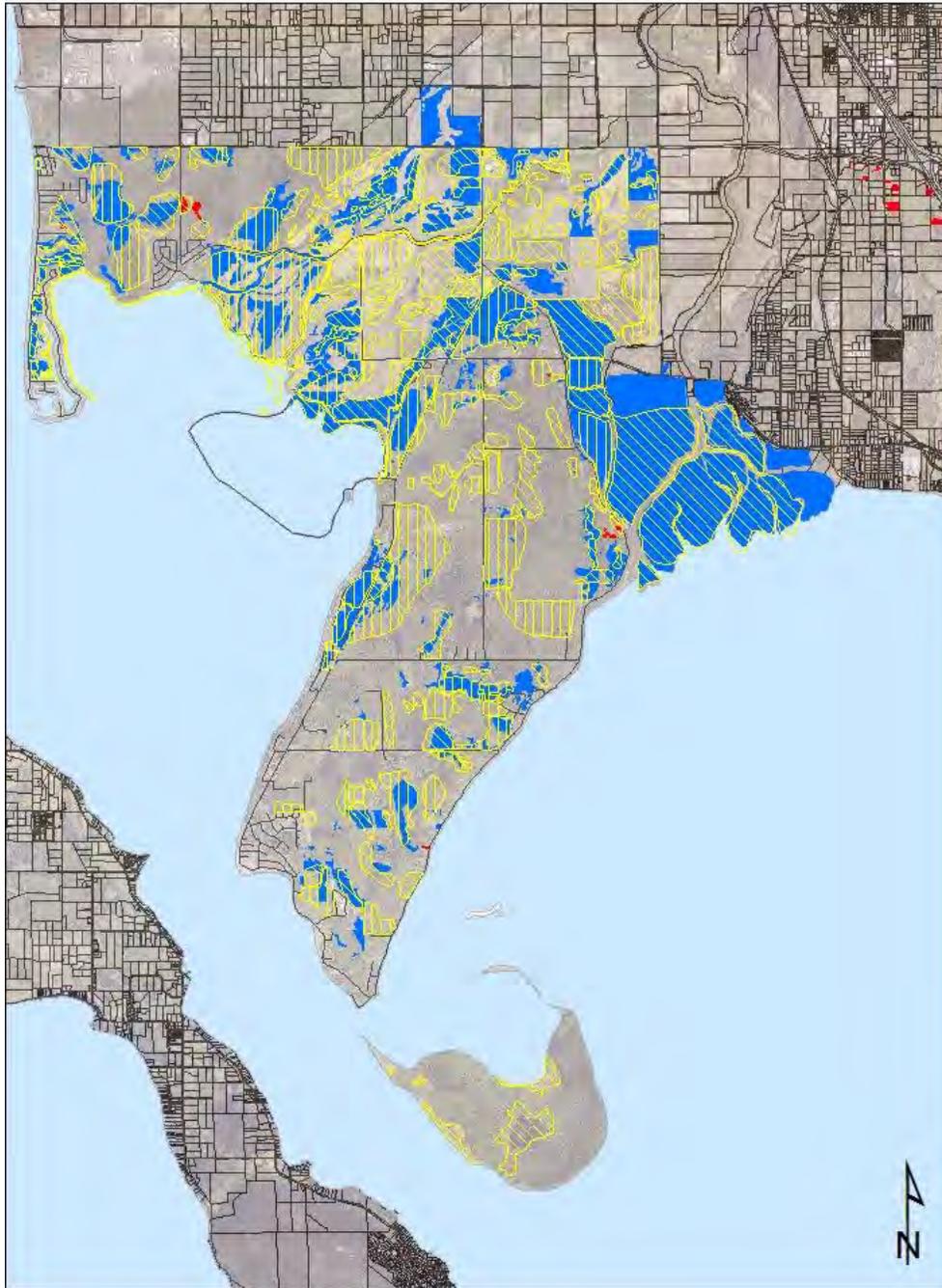
3.0 WETLAND INVENTORY UPDATE RESULTS

The Year 11 results are summarized below. Hard copies and electronic copies of the detailed field forms for the wetland areas are maintained on file at the Lummi Water Resources Division office. An example of the documentation is included as Appendix B.

3.1 Results of Wetland Mapping and Boundary Determination During 2015

A total of 25 wetland areas were reviewed on the Lummi Reservation in the Year 11 wetland inventory update effort (Figure 3). Detailed maps of each of these wetland areas are presented in Appendix A.

Figure 3 - Updated Wetland Boundaries and Estimated Wetland Locations



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As summarized in Table 1, a total of approximately 30 acres of wetlands were mapped as part of the Year 11 update. A comparison of the wetland acreage mapped during the first 11 years of this update effort is summarized in Table 1.

Table 1. Comparison of Wetland Areas Evaluated by Program Year

Year	Number of Wetlands Evaluated	Wetland Area (acres)
1 (2005)	36	1,413
2 (2006)	41	581
3 (2007)	20	380
4 (2008)	14	20
5 (2009)	48	127
6 (2010)	8	203
7 (2011)	50	269
8 (2012)	24	224
9 (2013)	15	183
10 (2014)	21	103
11(2015)	25	30
Total	297	3,533

The annual variations in the reported acreage of mapped wetlands are due to a number of factors including:

- The Year 1 Report summarized work that occurred over a period of almost 3 years.
- The Year 2 Report summarized work that occurred over a 1-year period.
- The Year 3 Report summarized work that occurred over a 9-month period with a reduced work week as the Water Resources Planner II worked only 32 hours a week starting in June 2006.
- The Year 4 Report summarizes work that occurred over an 11-month period that included a Quality Assurance/Quality Control effort with ESA Adolfson, a re-verification of some wetland boundaries by Douglass Consulting, and the reorganization of the Lummi Natural Resources Water Resources Division. This reorganization eliminated the Water Resources Planner II position and created a Water Resources Planner I position. The staff transition included an investment in formal training and practical/field applications with various wetland scientists, which reduced the amount of time available to advance the wetland inventory update effort.
- The Year 5 Report summarizes work that occurred over a 1-year period including work completed in conjunction with wetland contractors hired by the Lummi Planning Department, Lummi Housing Authority, or the Lummi Tribal Sewer and Water District.
- The Year 6 Report summarizes work that occurred over a 1-year period including work completed in conjunction with wetland contractors hired by the Lummi Planning Department, Lummi Housing Authority, or the Lummi Tribal Sewer and

Water District. Although fewer wetlands were evaluated during Year 6 compared to previous years, the acreage/area of the evaluated wetlands was greater than the wetland area evaluated during Year 4 and Year 5 combined.

- The Year 7 Report includes work that occurred over a period of several years. Thirty of the wetlands were updated in prior years but had not yet been formally incorporated into the inventory update. Twenty of the wetlands were original work done by a combination of LIBC staff and wetland consultants hired by the Lummi Planning Department, Lummi Housing Authority, and/or Lummi Natural Resources Department.
- The Years 8, 9, 10 and 11 Reports each summarize work that occurred over a 1-year period including work completed in conjunction with wetland consultants hired by the Lummi Planning Department, Lummi Housing Authority, Lummi Tribal Sewer and Water District, and/or Lummi Natural Resources Department.

Table 2 lists the 25 wetlands identified in the Year 11 wetland inventory update effort and their acreage. The identified wetlands are shown in Figure 3 and in higher resolution mapping included in Appendix A.

In the past, Table 2 also compared the wetland update acreage to the 1999 wetland inventory acreage. Over the past few years, it became evident that this comparison was not particularly valid in many cases. The majority of the wetlands identified in the current update effort were either not identified in the 1999 inventory, or the wetland location or extent was not similar enough to the 1999 polygon to compare. Because of this lack of alignment and the resulting reduced utility of comparing the current effort to the 1999 inventory results, the comparison is not included in this report and will not be included in future update reports.

During Year 11, all 1999 inventory wetlands reviewed were determined to be wetland, but the total size and/or boundary was different than mapped in 1999 in many cases. No wetland deletions to the overall wetland inventory were made in Year 11.

**Table 2 –Wetland Areas Reviewed During
the Year 11 Inventory Update**

Wetland ID Number	Watershed Identification	Inventory Update Wetland Size (Acres)
2015-01	R	0.57
2015-02	D	0.57
2015-03	Q	4.09
2015-04	O	4.38
2015-05	S	2.78
2015-06	S	0.05
2015-07	S	0.37
2015-08	S	1.28
2015-09	K	0.01
2015-10	K	0.12
2015-11	K	0.20
2015-12	K	0.09
2015-13	K	0.33
2015-14	K	0.01
2015-15	n/a	4.57
2015-16	n/a	0.60
2015-17	n/a	2.00
2015-18	n/a	0.56
2015-19	n/a	1.89
2015-20	n/a	3.18
2015-21	n/a	0.28
2015-22	n/a	0.16
2015-23	n/a	0.07
2015-24	n/a	1.12
2015-25	n/a	0.87
Total		30.15

3.2 Results of Wetland Classification

Pursuant to 17 LAR 06.030, the WDOE *Washington State Wetland Rating System for Western Washington* (Hruby 2014) was applied to the majority of wetland areas evaluated in 2015. The 2014 WDOE rating system, was used to classify all wetlands reviewed in Year 11. Table 3 presents a summary of the wetland rating and classification for wetlands evaluated.

Table 3 – Wetland Rating and HGM Classification

Wetland ID Number	Watershed Identification	Wetland Rating	HGM Class
2015-01	R	III	Depressional
2015-02	D	III	Depressional
2015-03	Q	III	Depressional
2015-04	O	III	Depressional
2015-05	S	III	Depressional
2015-06	S	IV	Slope
2015-07	S	III	Depressional
2015-08	S	III	Depressional
2015-09	K	III	Depressional
2015-10	K	III	Depressional
2015-11	K	III	Depressional
2015-12	K	III	Depressional
2015-13	K	IV	Depressional
2015-14	K	IV	Depressional
2015-15	n/a	II	Depressional
2015-16	n/a	III	Depressional
2015-17	n/a	III	Depressional
2015-18	n/a	III	Depressional
2015-19	n/a	III	Depressional
2015-20	n/a	I	Depressional
2015-21	n/a	II	Depressional
2015-22	n/a	III	Depressional
2015-23	n/a	III	Depressional
2015-24	n/a	III	Depressional
2015-25	n/a	III	Depressional

*Rating based on 2004 WDOE rating system. All others based on 2014 rating system.

Of the 25 wetlands evaluated during Year 11, one wetland was rated as Category 1, two wetlands were rated as Category 2, 19 were rated as Category 3 wetlands, and three wetlands were rated as Category 4.

4.0 SUMMARY

Accurate information on wetland locations, extent, wetland category, and wetland functions is needed to effectively manage Reservation wetlands pursuant to the Lummi Nation Water Resources Protection Code (LCL Title 17) and associated Lummi Administrative Regulations. Although the 1999 inventory represents an important planning tool and a significant improvement over the previously available information, it has proven to be too general for many planning efforts. Refining the spatial resolution of the wetland mapping and classifying the wetlands into the regulatory categories identified in Title 17 is intended to support efforts to protect these wetland resources and the important ecological, hydrological, and water quality protection functions that

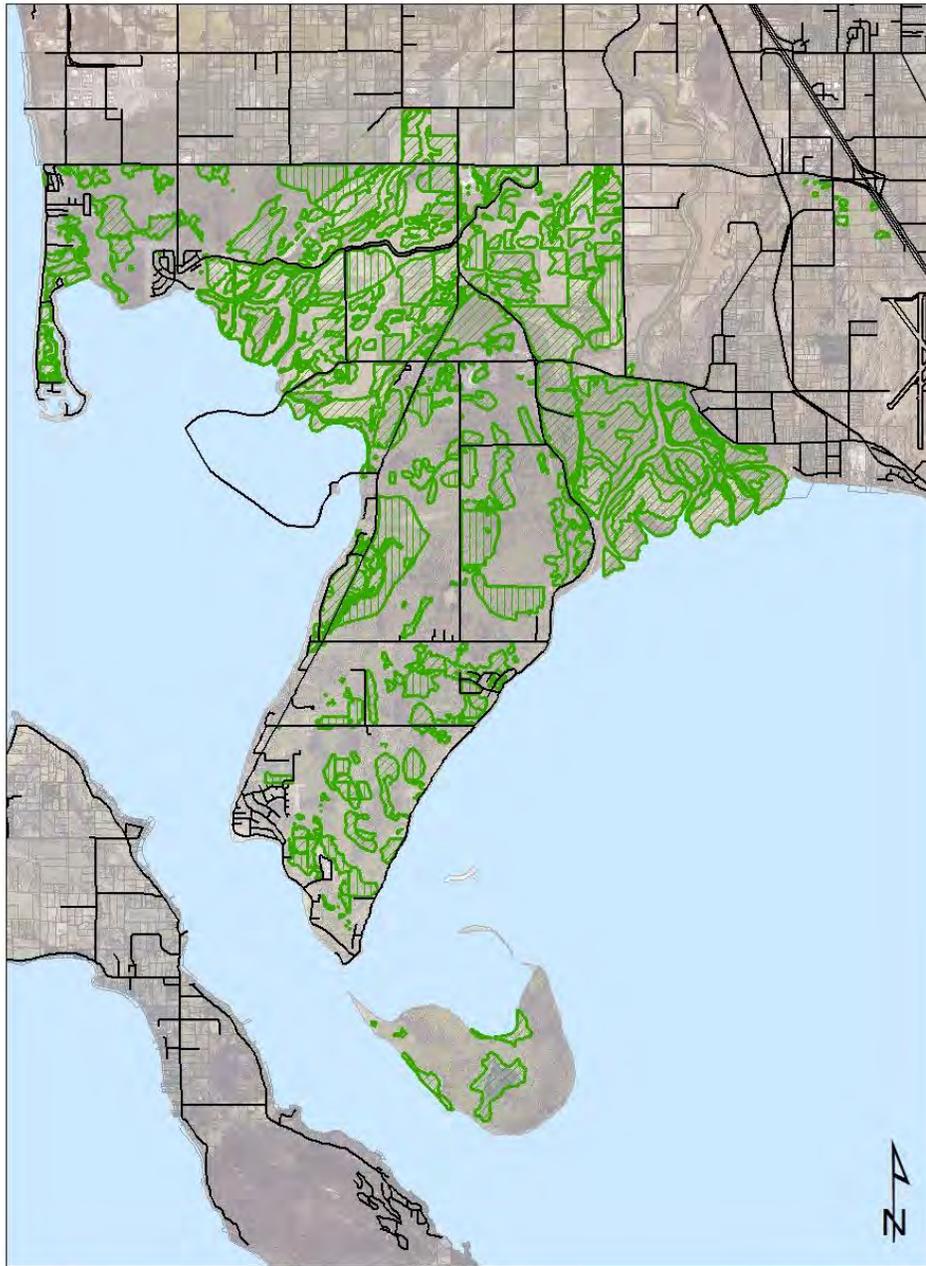
they provide. Because of the large number of wetland areas on the Reservation, the effort to refine the spatial resolution of the wetland mapping and to classify the Reservation wetlands is projected to require several years to complete. This report summarizes the results of Year 11 of this inventory update effort.

The overall result of the inventory update effort will be a more accurate GIS data layer and an associated database that contains the wetland category and other summary information about each wetland on the Reservation. Information about the wetland category will allow for the associated buffer to be mapped.

Hard copies of field notes (e.g., wetland rating worksheets, data, location maps) and electronic copies are maintained in the Lummi Water Resources Division office. Until the update effort is completed, the GIS data layer and associated database will be a work in progress. The current version of the Lummi Reservation Wetland Map is shown in Figure 4. Figure 4 shows the information in Figure 3 except that the 1999 wetland locations were removed where more accurate information was available from the Year 1 through Year 11 inventory updates. Figure 4 is intended to reflect the best available information on Reservation wetlands to date. Based on the changes to the spatial locations and the utility of the collected information on wetland function and category, the inventory update is recommended to continue until it is completed.

As described previously, Year 11 of this inventory update resulted in revising the locations and extent of 25 wetland areas and classifying the wetlands into one of four categories. These 25 wetlands cover 30.15 acres. At the end of Year 11 of this update effort, a total of 302 wetland areas were evaluated, encompassing approximately 50 percent of the Reservation land (not including tidelands).

Figure 4 - Best Available Wetland Inventory Map (December 2015)



-  Wetland
-  Wetland Complex
-  Roads
-  Parcels

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APPENDIX A – INDIVIDUAL WETLAND MAPS

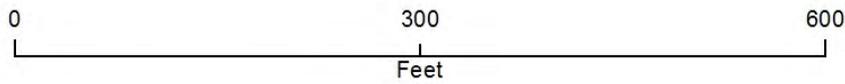
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2015-01



-  Field Verified 2015
-  Field Verified 2000-2014
-  Wetland (Estimated 1999)
-  Wetland Complex (Estimated 1999)

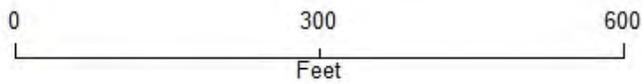
-  Roads
-  Lummi Reservation



2015-02



-  Field Verified 2015
-  Field Verified 2000-2014
-  Wetland (Estimated 1999)
-  Wetland Complex (Estimated 1999)
-  Roads
-  Lummi Reservation

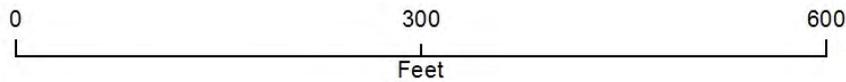


2015-03A, 2015-03B, & 2015-03C

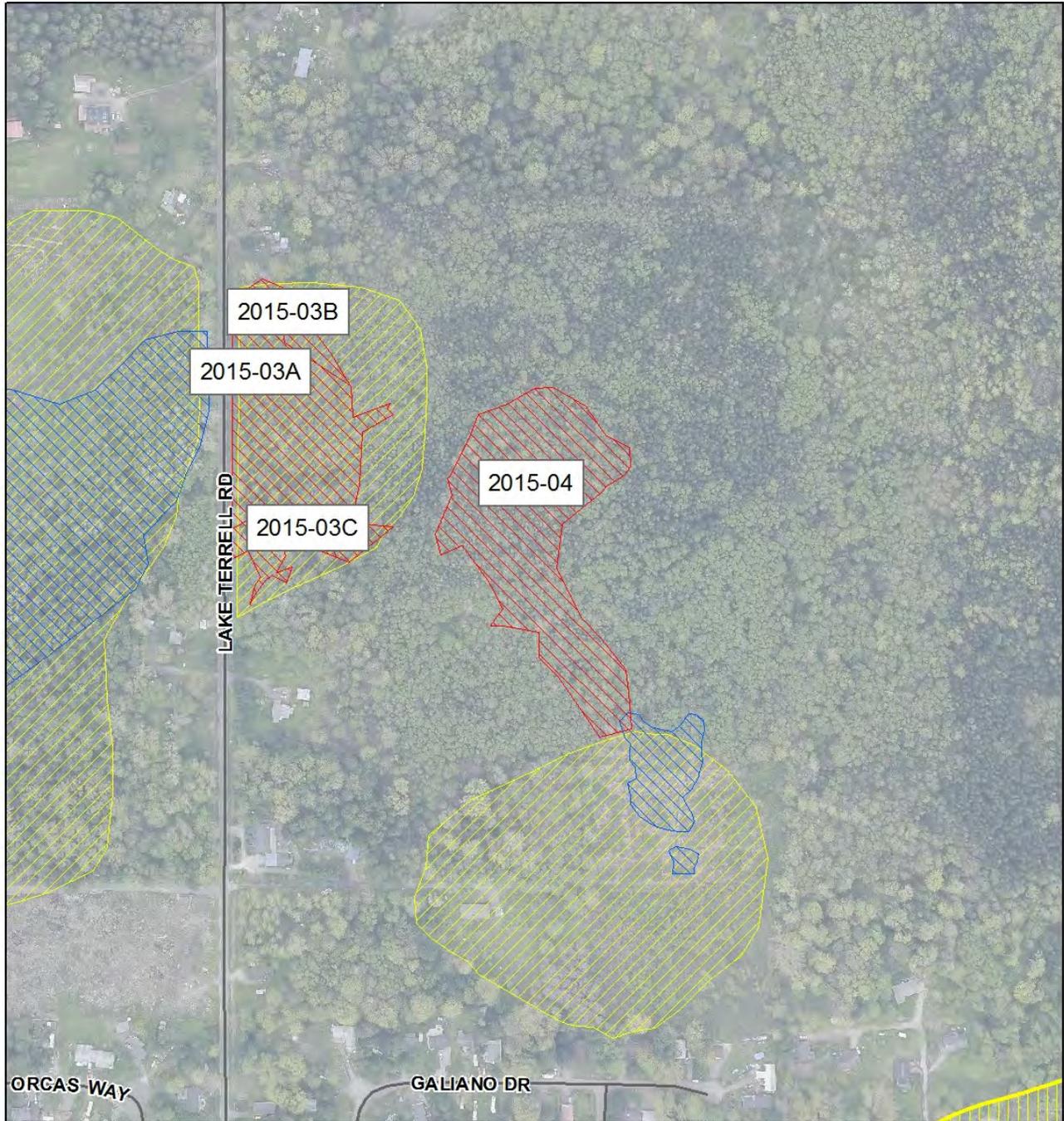


-  Field Verified 2015
-  Field Verified 2000-2014
-  Wetland (Estimated 1999)
-  Wetland Complex (Estimated 1999)

-  Roads
-  Lummi Reservation

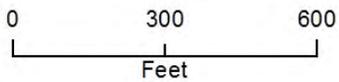


2015-04

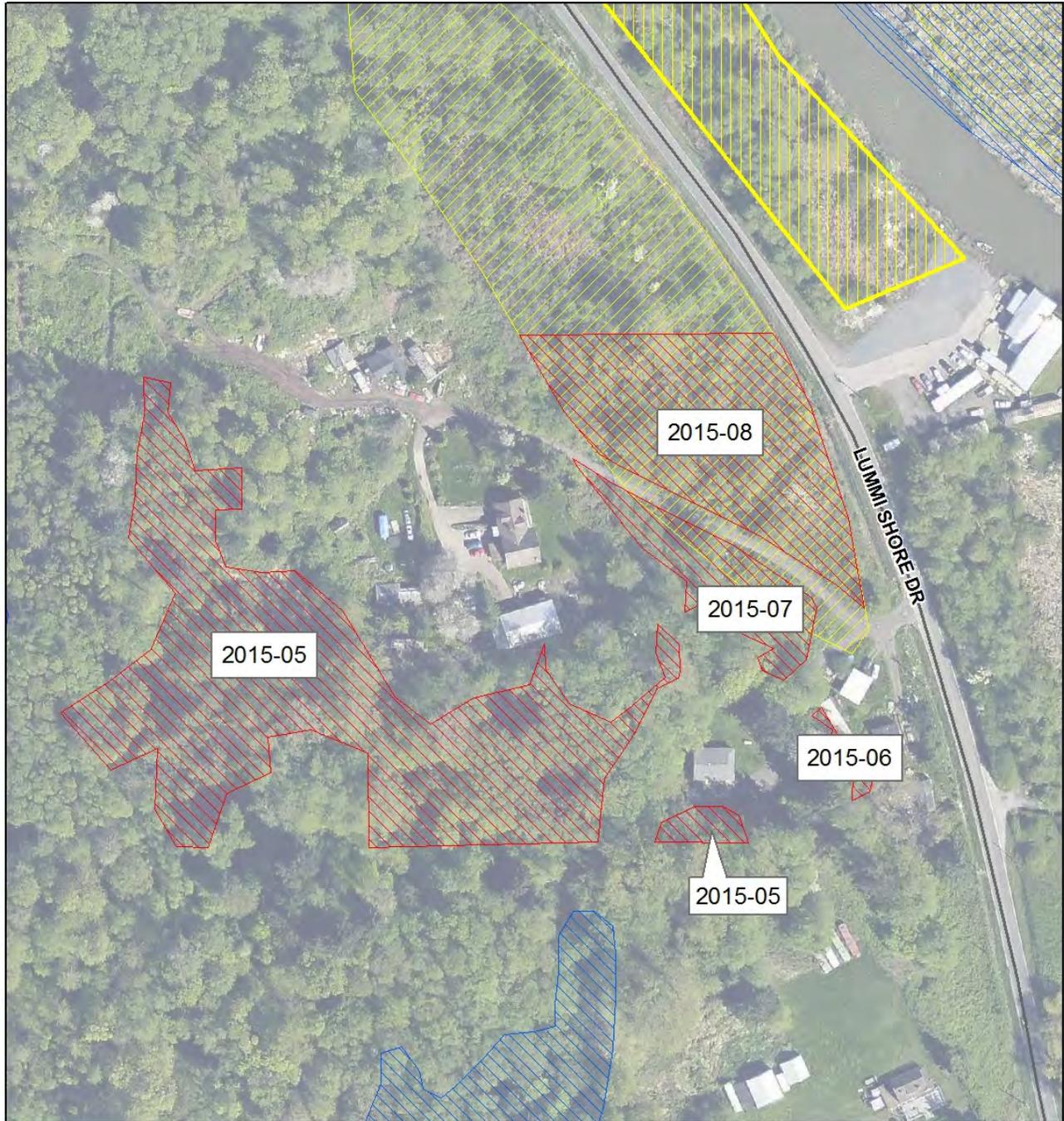


-  Field Verified 2015
-  Field Verified 2000-2014
-  Wetland (Estimated 1999)
-  Wetland Complex (Estimated 1999)

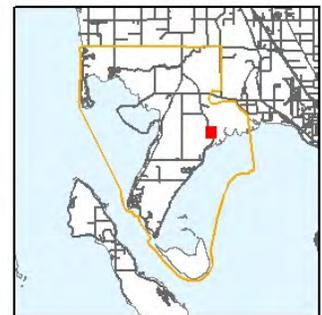
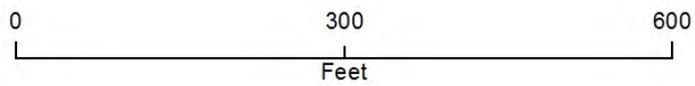
-  Roads
-  Lummi Reservation



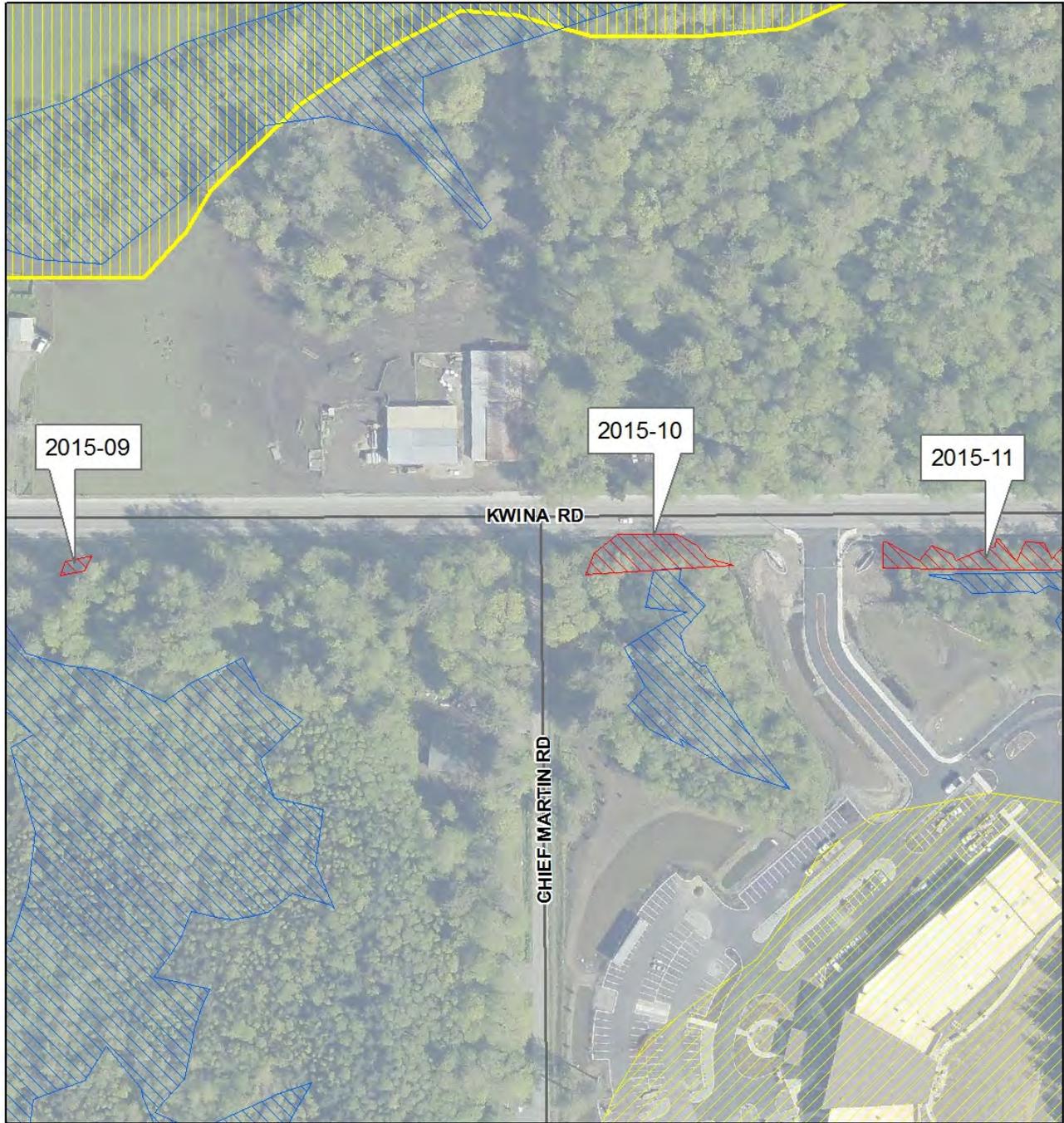
2015-05, 2015-06, 2015-07, & 2015-08



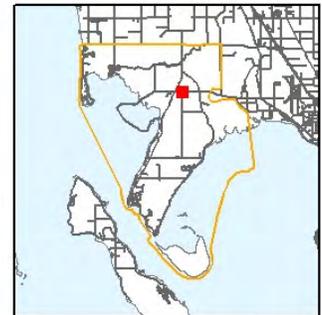
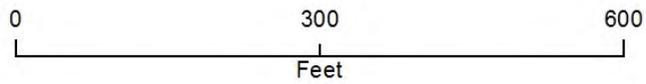
-  Field Verified 2015
-  Field Verified 2000-2014
-  Wetland (Estimated 1999)
-  Wetland Complex (Estimated 1999)
-  Roads
-  Lummi Reservation



2015-09, 2015-10, & 2015-11



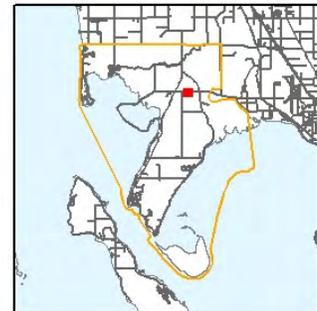
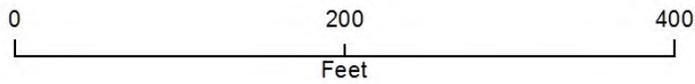
-  Field Verified 2015
-  Field Verified 2000-2014
-  Wetland (Estimated 1999)
-  Wetland Complex (Estimated 1999)
-  Roads
-  Lummi Reservation



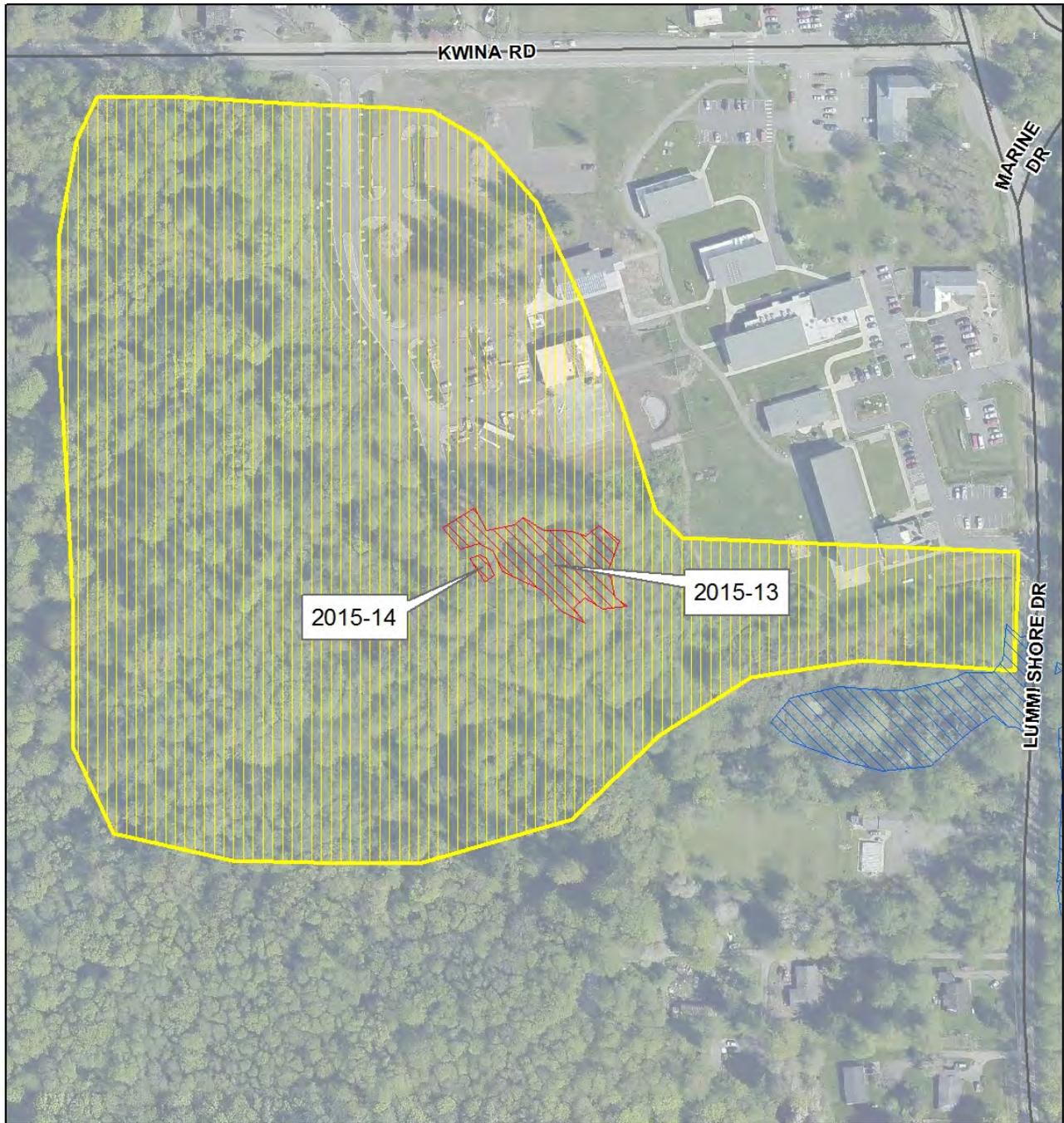
2015-12



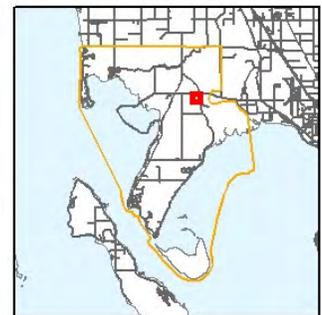
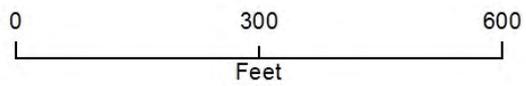
-  Field Verified 2015
-  Field Verified 2000-2014
-  Wetland (Estimated 1999)
-  Wetland Complex (Estimated 1999)
-  Roads
-  Lummi Reservation



2015-13 & 2015-14



-  Field Verified 2015
-  Field Verified 2000-2014
-  Wetland (Estimated 1999)
-  Wetland Complex (Estimated 1999)
-  Roads
-  Lummi Reservation

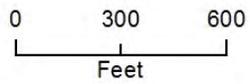


2015-15, 2015-16, 2015-17, 2015-18, 2015-19, & 2015-20



-  Field Verified 2015
-  Field Verified 2000-2014
-  Wetland (Estimated 1999)
-  Wetland Complex (Estimated 1999)

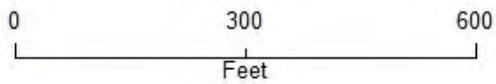
-  Roads
-  Lummi Reservation



2015-21, 2015-22, 2015-23, 2015-24, & 2015-25

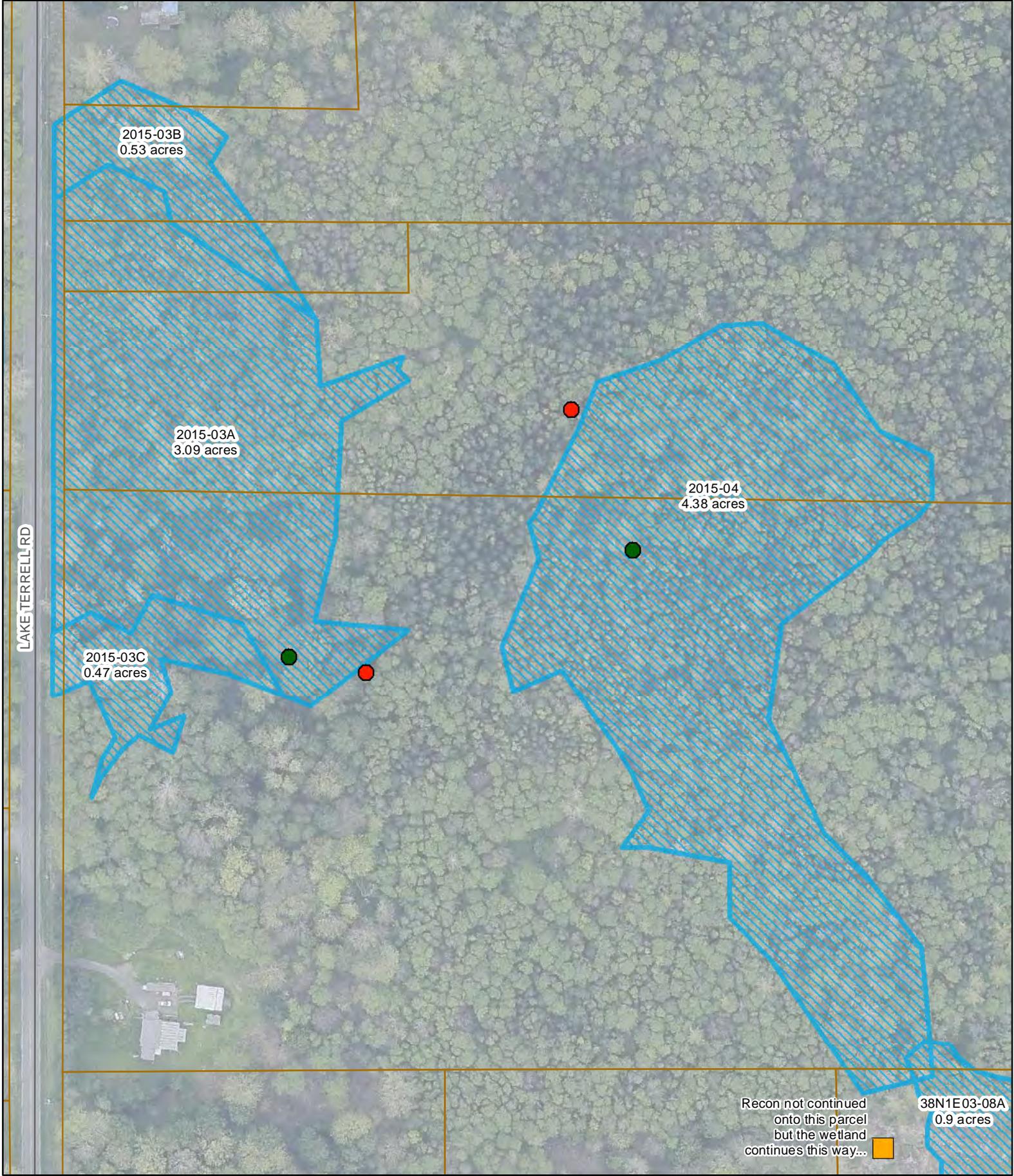


-  Field Verified 2015
-  Field Verified 2000-2014
-  Wetland (Estimated 1999)
-  Wetland Complex (Estimated 1999)
-  Roads
-  Lummi Reservation



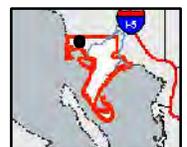
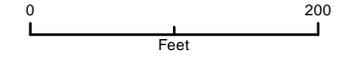
APPENDIX B – SAMPLE OF WETLAND RATING WORKSHEETS

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Wetlands 2015-03 and 2015-04

- Wetland (Field Verified)
- Wetland (Not Verified)
- Lummi Reservation Parcels
- Upland Test Pit
- Wetland Test Pit
- Wetland Notes and Observations



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Photo 1. Overview of Wetland 2015-04



Photo 2. Wetland 2015-04 sample point

RATING SUMMARY – Western Washington

Name of wetland (or ID #): 2015-04 Date of site visit: 3/27/15
 Rated by V. Jackson, K. Poppe Trained by Ecology? Yes No Date of training 2014
 HGM Class used for rating Depressional Wetland has multiple HGM classes? Y N

NOTE: Form is not complete without the figures requested (figures can be combined).
 Source of base aerial photo/map Lummi GIS Aerial Imagery

OVERALL WETLAND CATEGORY III (based on functions or special characteristics)

1. Category of wetland based on FUNCTIONS

- Category I – Total score = 23 - 27
- Category II – Total score = 20 - 22
- Category III – Total score = 16 - 19
- Category IV – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>Circle the appropriate ratings</i>				
Site Potential	H <input type="radio"/> M <input checked="" type="radio"/> L <input type="radio"/>	H <input type="radio"/> M <input checked="" type="radio"/> L <input type="radio"/>	H <input type="radio"/> M <input checked="" type="radio"/> L <input type="radio"/>	
Landscape Potential	H <input type="radio"/> M <input type="radio"/> L <input checked="" type="radio"/>	H <input type="radio"/> M <input type="radio"/> L <input checked="" type="radio"/>	H <input checked="" type="radio"/> M <input type="radio"/> L <input type="radio"/>	
Value	H <input checked="" type="radio"/> M <input type="radio"/> L <input type="radio"/>	H <input type="radio"/> M <input type="radio"/> L <input checked="" type="radio"/>	H <input type="radio"/> M <input type="radio"/> L <input checked="" type="radio"/>	TOTAL
Score Based on Ratings	6	4	6	16

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY	
Estuarine	I II	<input type="checkbox"/>
Wetland of High Conservation Value	I	<input type="checkbox"/>
Bog	I	<input type="checkbox"/>
Mature Forest	I	<input type="checkbox"/>
Old Growth Forest	I	<input type="checkbox"/>
Coastal Lagoon	I II	<input type="checkbox"/>
Interdunal	I II III IV	<input type="checkbox"/>
None of the above	<input type="checkbox"/>	<input type="checkbox"/>

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	A
Hydroperiods	D 1.4, H 1.2	B
Location of outlet (<i>can be added to map of hydroperiods</i>)	D 1.1, D 4.1	C
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	D 2.2, D 5.2	C
Map of the contributing basin	D 4.3, D 5.3	C
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	C
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	D
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	D

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 (<i>can be added to another figure</i>)	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream (<i>can be added to another figure</i>)	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 (<i>can be added to another figure</i>)	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 (<i>can be added to figure above</i>)	S 4.1	
Boundary of 150 ft buffer (<i>can be added to another figure</i>)	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	

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 2015-04

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.*

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. <u>Characteristics of surface water outflows from the wetland:</u> Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch.	points = 3 points = 2 points = 1 points = 1	2
D 1.2. <u>The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions).</u> Yes = 4 No = 0		0
D 1.3. <u>Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes):</u> Wetland has persistent, ungrazed, plants > 95% of area Wetland has persistent, ungrazed, plants > ½ of area Wetland has persistent, ungrazed plants > 1/10 of area Wetland has persistent, ungrazed plants < 1/10 of area	points = 5 points = 3 points = 1 points = 0	5
D 1.4. <u>Characteristics of seasonal ponding or inundation:</u> <i>This is the area that is ponded for at least 2 months. See description in manual.</i> Area seasonally ponded is > ½ total area of wetland Area seasonally ponded is > ¼ total area of wetland Area seasonally ponded is < ¼ total area of wetland	points = 4 points = 2 points = 0	4
Total for D 1 Add the points in the boxes above		11

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

D 2.0. Does the landscape have the potential to support the water quality function of the site?		
D 2.1. Does the wetland unit receive stormwater discharges?	Yes = 1 No = 0	0
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?	Yes = 1 No = 0	0
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		0

Rating of Landscape Potential If score is: 3 or 4 = H 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	2
Total for D 3 Add the points in the boxes above		2

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

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	2
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	
D 4.2. <u>Depth of storage during wet periods:</u> <i>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.</i>		
Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	0
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	
D 4.3. <u>Contribution of the wetland to storage in the watershed:</u> <i>Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.</i>		
The area of the basin is less than 10 times the area of the unit	points = 5	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	
Total for D 4	Add the points in the boxes above	7

Rating of Site Potential If score is: 12-16 = H 6-11 = M 0-5 = L

Record the rating on the first page

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?		
D 5.1. Does the wetland receive stormwater discharges?	Yes = 1 No = 0	0
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff?	Yes = 1 No = 0	0
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	0
Total for D 5	Add the points in the boxes above	0

Rating of Landscape Potential If score is: 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. <u>The unit is in a landscape that has flooding problems.</u> <i>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.</i>		
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):		0
• 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. <i>Explain why</i> _____	points = 0	
There are no problems with flooding downstream of the wetland.	points = 0	<input checked="" type="checkbox"/>
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?	Yes = 2 No = 0	0
Total for D 6	Add the points in the boxes above	0

Rating of Value If score is: 2-4 = H 1 = M 0 = L

Record the rating on the first page

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.*

- | | | |
|--|----------------------------------|---|
| <input type="checkbox"/> Aquatic bed | 4 structures or more: points = 4 | 2 |
| <input checked="" type="checkbox"/> Emergent | 3 structures: points = 2 | |
| <input type="checkbox"/> Scrub-shrub (areas where shrubs have > 30% cover) | 2 structures: points = 1 | |
| <input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover) | 1 structure: points = 0 | |
| <i>If the unit has a Forested class, check if:</i> | | |
| <input checked="" type="checkbox"/> 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 | | |

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*).

- | | | |
|--|-------------------------------------|---|
| <input type="checkbox"/> Permanently flooded or inundated | 4 or more types present: points = 3 | 1 |
| <input checked="" type="checkbox"/> Seasonally flooded or inundated | 3 types present: points = 2 | |
| <input type="checkbox"/> Occasionally flooded or inundated | 2 types present: points = 1 | |
| <input checked="" type="checkbox"/> Saturated only | 1 type present: points = 0 | |
| <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland | | |
| <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland | | |
| <input type="checkbox"/> Lake Fringe wetland | 2 points | |
| <input type="checkbox"/> Freshwater tidal wetland | 2 points | |

H 1.3. Richness of plant species

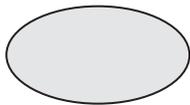
Count the number of plant species in the wetland that cover at least 10 ft².

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

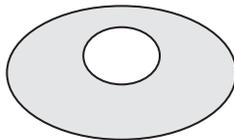
- | | | |
|------------------------------|------------|---|
| If you counted: > 19 species | points = 2 | 1 |
| 5 - 19 species | points = 1 | |
| < 5 species | points = 0 | |

H 1.4. Interspersion of habitats

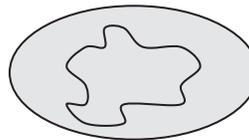
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



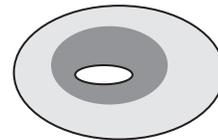
None = 0 points



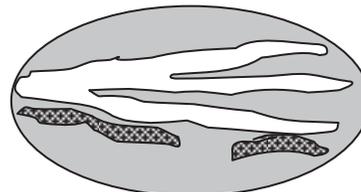
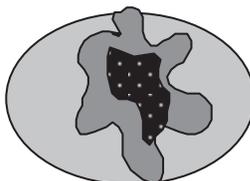
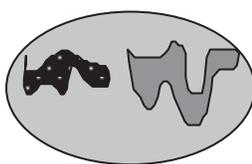
Low = 1 point



Moderate = 2 points



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



1

<p>H 1.5. Special habitat features: Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i> <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). <input type="checkbox"/> Standing snags (dbh > 4 in) within the wetland <input type="checkbox"/> 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) <input type="checkbox"/> 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 (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>) <input checked="" type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>) <input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (<i>see H 1.1 for list of strata</i>)</p>		3
Total for H 1	Add the points in the boxes above	8

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

<p>H 2.0. Does the landscape have the potential to support the habitat functions of the site?</p>		
<p>H 2.1. Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>). Calculate: % undisturbed habitat <u>30</u> + [(% moderate and low intensity land uses)/2] <u>7.5</u> = <u>37.5</u> % 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</p>		3
<p>H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. Calculate: % undisturbed habitat <u>40</u> + [(% moderate and low intensity land uses)/2] <u>15</u> = <u>55</u> % 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</p>		3
<p>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</p>		0
Total for H 2	Add the points in the boxes above	6

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

<p>H 3.0. Is the habitat provided by the site valuable to society?</p>		
<p>H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? <i>Choose only the highest score that applies to the wetland being rated.</i> 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</p>		0

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

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.*

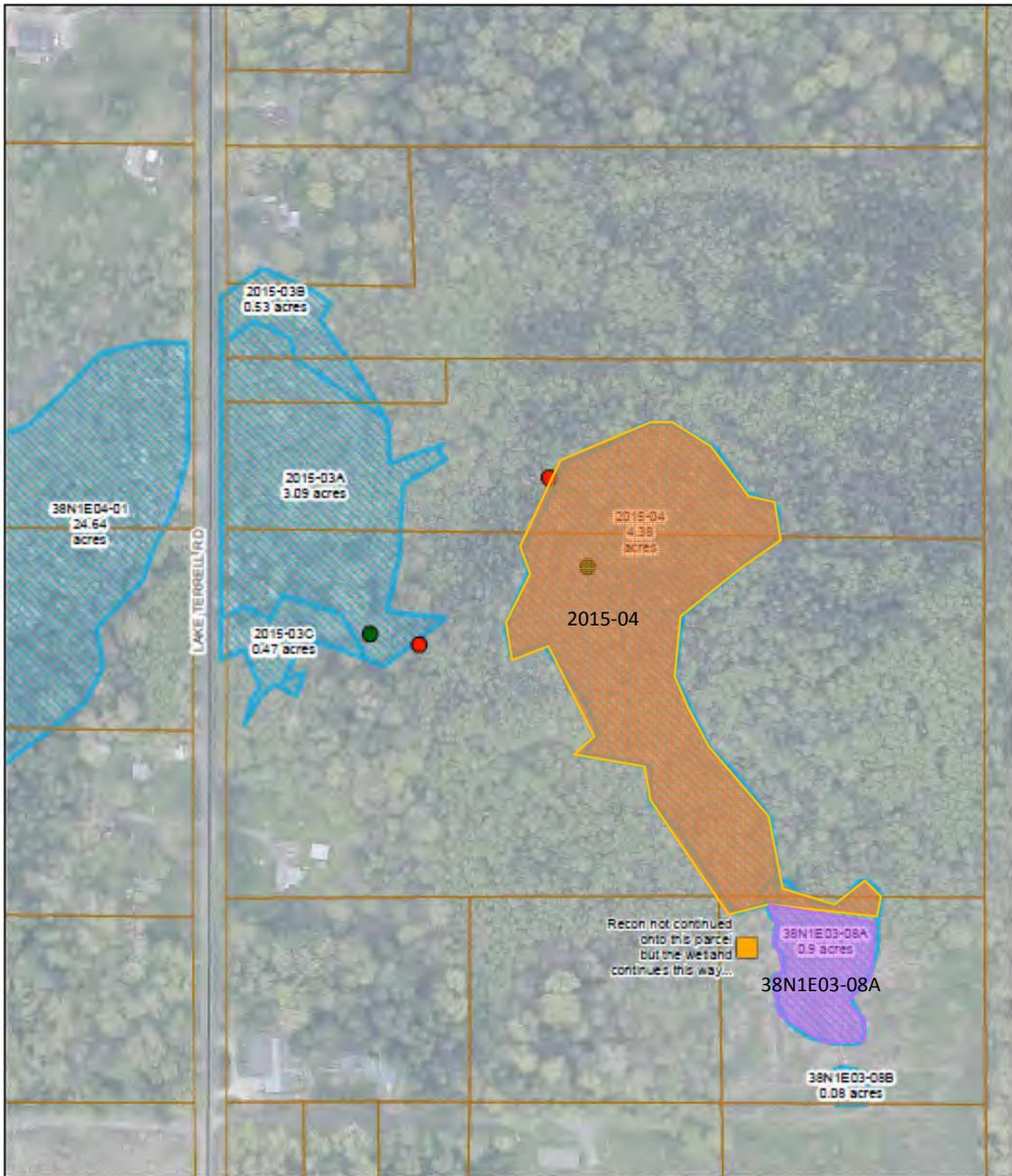
- **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).
- **Herbaceous Balds:** Variable size patches of 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.

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

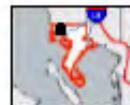
Wetland Type	Category
<i>Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.</i>	
<p>SC 1.0. Estuarine wetlands</p> <p>Does the wetland meet the following criteria for Estuarine wetlands?</p> <ul style="list-style-type: none"> — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt <p align="right">Yes –Go to SC 1.1 No= Not an estuarine wetland</p>	
<p>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?</p> <p align="right">Yes = Category I No - Go to SC 1.2</p>	Cat. I <input type="checkbox"/>
<p>SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions?</p> <ul style="list-style-type: none"> — 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 <i>Spartina</i>, 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 unmowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. <p align="right">Yes = Category I No = Category II</p>	Cat. I <input type="checkbox"/> Cat. II <input type="checkbox"/>
<p>SC 2.0. Wetlands of High Conservation Value (WHCV)</p> <p>SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value?</p> <p align="right">Yes – Go to SC 2.2 No – Go to SC 2.3</p> <p>SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value?</p> <p align="right">Yes = Category I No = Not a WHCV</p> <p>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</p> <p align="right">Yes – Contact WNHP/WDNR and go to SC 2.4 No = Not a WHCV</p> <p>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?</p> <p align="right">Yes = Category I No = Not a WHCV</p>	Cat. I <input type="checkbox"/>
<p>SC 3.0. Bogs</p> <p>Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES you will still need to rate the wetland based on its functions.</i></p> <p>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?</p> <p align="right">Yes – Go to SC 3.3 No – Go to SC 3.2</p> <p>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?</p> <p align="right">Yes – Go to SC 3.3 No = Is not a bog</p> <p>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?</p> <p align="right">Yes = Is a Category I bog No – Go to SC 3.4</p> <p>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.</p> <p>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?</p> <p align="right">Yes = Is a Category I bog No = Is not a bog</p>	Cat. I <input type="checkbox"/>

<p>SC 4.0. Forested Wetlands</p> <p>Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? <i>If you answer YES you will still need to rate the wetland based on its functions.</i></p> <ul style="list-style-type: none"> — 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). <p style="text-align: right;">Yes = Category I No = Not a forested wetland for this section</p>	Cat. I <input type="checkbox"/>
<p>SC 5.0. Wetlands in Coastal Lagoons</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <ul style="list-style-type: none"> — 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 (<i>needs to be measured near the bottom</i>) <p style="text-align: right;">Yes – Go to SC 5.1 No = Not a wetland in a coastal lagoon</p> <p>SC 5.1. Does the wetland meet all of the following three conditions?</p> <ul style="list-style-type: none"> — 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 unmowed grassland. — The wetland is larger than 1/10 ac (4350 ft²) <p style="text-align: right;">Yes = Category I No = Category II</p>	Cat. I <input type="checkbox"/> Cat. II <input type="checkbox"/>
<p>SC 6.0. Interdunal Wetlands</p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <i>If you answer yes you will still need to rate the wetland based on its habitat functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> — 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 <p style="text-align: right;">Yes – Go to SC 6.1 No = not an interdunal wetland for rating</p> <p>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</p> <p>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</p> <p>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</p>	Cat. I <input type="checkbox"/> Cat. II <input type="checkbox"/> Cat. III <input type="checkbox"/> Cat. IV <input type="checkbox"/>
<p>Category of wetland based on Special Characteristics</p> <p>If you answered No for all types, enter "Not Applicable" on Summary Form</p>	-



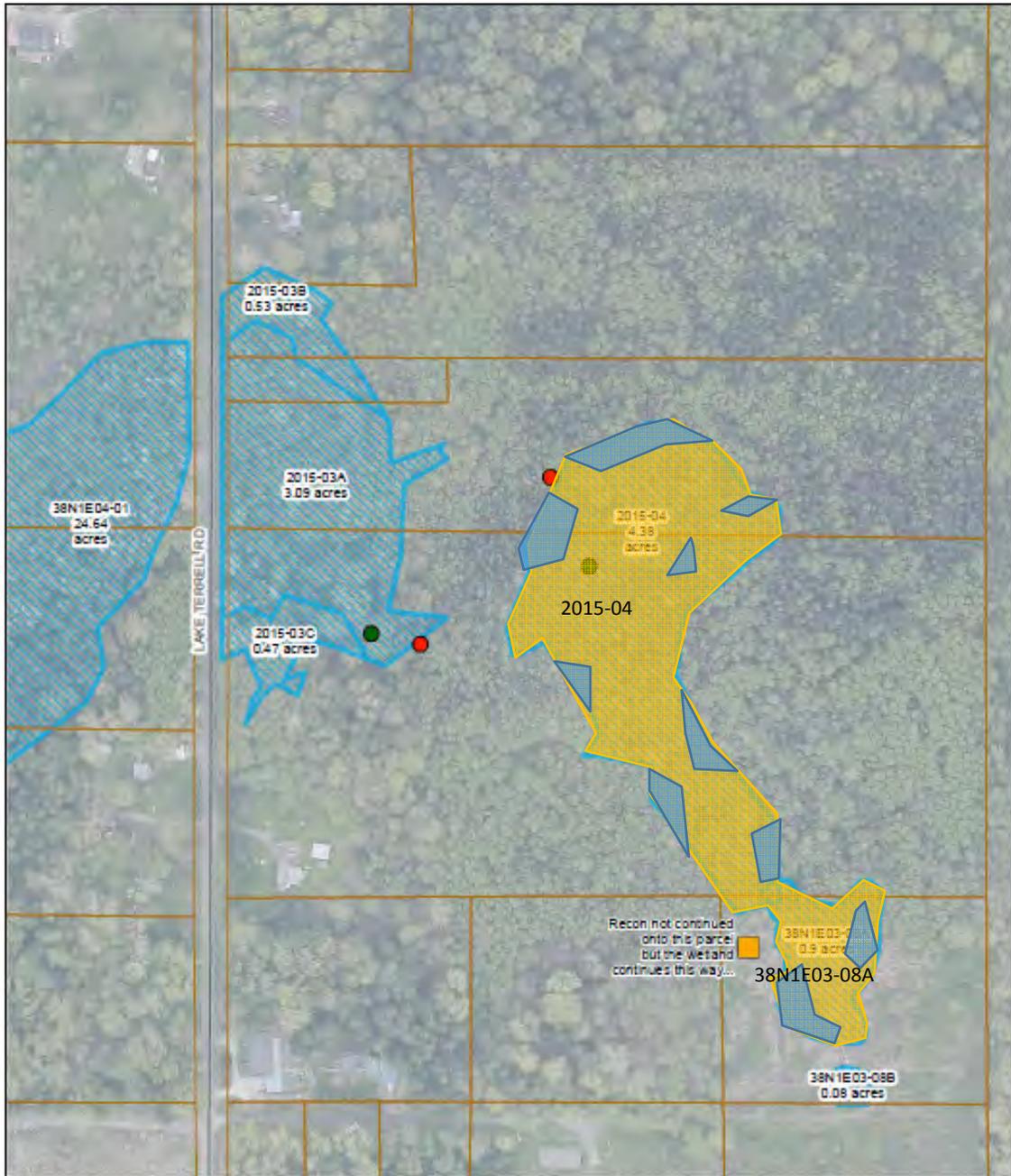
Wetlands 2015-03 and 2015-04

- Wetland (Field Verified)
- Wetland (Not Verified)
- Wetland Notes and Observations
- Upland Test Pit
- Wetland Test Pit
- Lummi Reservation Parcels



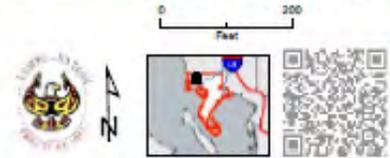
Emergent	Scrub-shrub	Forested
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<p>ECOLOGICAL</p> <p>NORTHWEST</p>	<p>Cowardin Class Map for Wetland Rating</p> <p>Wetland 2015-04 (continuous with 38N1E03-08A) Wetland Inventory</p>	<p>Figure A</p> <p>March 2015</p>
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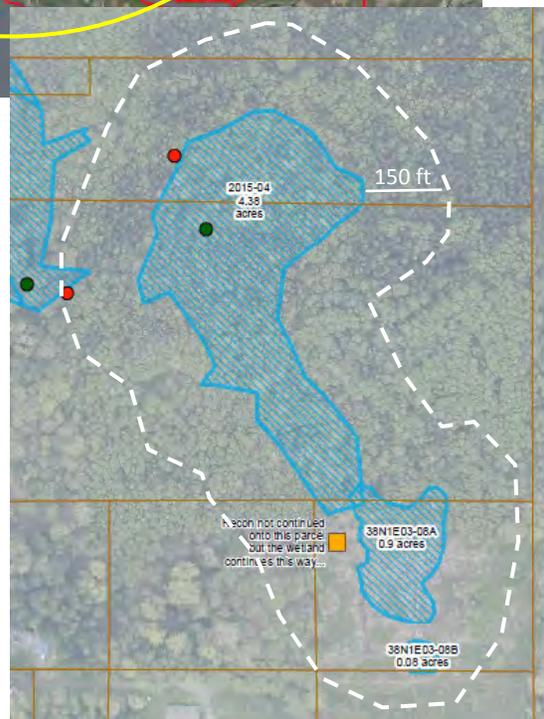
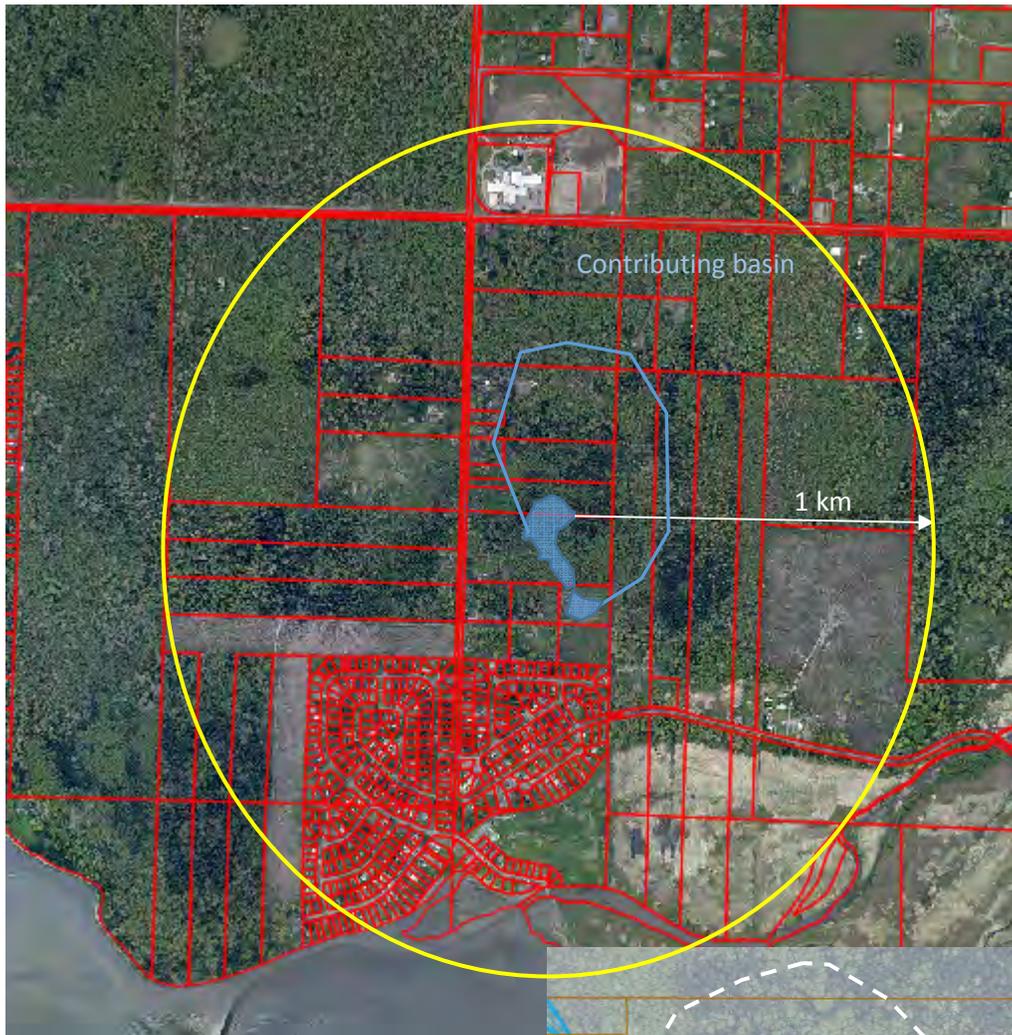
Wetlands 2015-03 and 2015-04

- Wetland (Field Verified)
- Wetland (Not Verified)
- Lummi Reservation Parcels
- Upland Test Pit
- Wetland Test Pit
- Wetland Notes and Observations

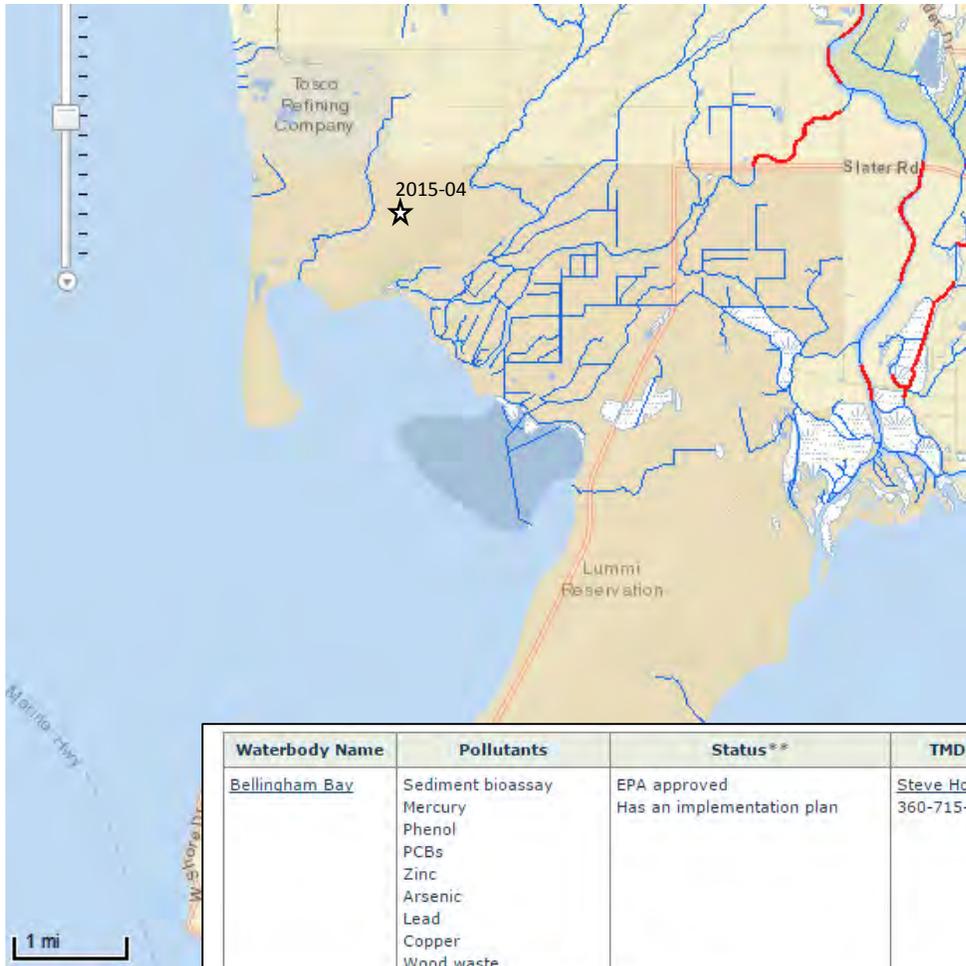


Seasonal Saturation	Seasonal Inundation
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<p>ECOLOGICAL</p> <p>NORTHWEST</p>	<p>Hydrology Map for Wetland Rating</p> <p>Wetland 2015-04 (continuous with 38N1E03-08A)</p> <p>Wetland Inventory</p>	<p>Figure B</p> <p>March 2015</p>
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<p>NORTHWEST</p> <p>ECOLOGICAL</p> 	<p>Buffer Map for Wetland Rating</p> <p>Wetland 2015-04 (continuous with 38N1E03-08A) Wetland Inventory</p>	<p>Figure C</p> <p>March 2015</p>
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Waterbody Name	Pollutants	Status**	TMDL Lead
Bellingham Bay	Sediment bioassay Mercury Phenol PCBs Zinc Arsenic Lead Copper Wood waste	EPA approved Has an implementation plan	Steve Hood 360-715-5211
Johnson Creek	Dissolved Oxygen Fecal Coliform	EPA approved Has an implementation plan	Steve Hood 360-715-5211
Lake Whatcom	Dissolved Oxygen Fecal Coliform Phosphorus	Under Development	Steve Hood 360-715-5211
Nooksack River	Fecal Coliform	EPA approved Has an implementation plan	Steve Hood 360-715-5211
Sumas River	Ammonia-N BOD Chlorine	EPA approved	Steve Hood 360-715-5211
Whatcom Creek	Fecal Coliform	Under Development	Steve Hood 360-715-5211
Whatcom, Squalicum and Padden Creeks	Temperature	EPA approved	Steve Hood 360-715-5211

** Status will be listed as one of the following: Approved by EPA, Under Development or Implementation

No TMDLs or waters on the 303(d) list are in the vicinity of Wetland 2015-04

NORTHWEST 	303D List for Wetland Rating Wetland 2015-04 (continuous with 38N1E03-08A) Wetland Inventory	Figure D March 2015
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WETLAND DETERMINATION DATA FORM – Western Mountain, Valley Coast Region

Project Site: 2015-04	City/County: Whatcom	Sample Date: 3/27/2015
Applicant/Owner: Lummi Nation	State: WA	Sample Point: Wetland
Investigator: V. Jackson, K. Poppe, G. Gabrisch	Section/Township/Range: 03/38N/01E	
Landform (hillslope, terrace, etc):	Local Relief (concave, convex, none) :	Subregion: LRR A
Soil Map Unit Name: Histosols (72), Whitehorn silt loam (184), Kickerville silt loam (80), Birchbay silt loam (12, 14)		NWI Classification:
Are climatic/hydrologic conditions on the site typical of this time of year? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (if no, explain in Remarks)		
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are "Normal Circumstances" present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> 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 <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Wetland 2015-04. Positive indicators for all three parameters were observed at this location.	

VEGETATION

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Indicator Status	Dominant Species?	Dominance Test worksheet	
<i>Alnus rubra</i>	80	FAC	<input checked="" type="checkbox"/>	Number of Dominant Species that are OBL, FACW, or FAC:	4
<i>Populus balsamifera</i>	10	FAC	<input type="checkbox"/>		(A)
<i>Betula papyrifera</i>	5	FAC	<input type="checkbox"/>		
<i>Thuja plicata</i>	tr	FAC	<input type="checkbox"/>		Total number of dominant species across all strata:
Total Cover:	95				
Sapling/Shrub Stratum (Plot size: 15 feet)				Percent of dominant species that or OBL, FACW, FAC:	
<i>Rubus spectabilis</i>	50	FAC	<input checked="" type="checkbox"/>		100
<i>Cornus alba</i>	20	FACW	<input checked="" type="checkbox"/>		(A/AB)
<i>Spiraea douglasii</i>	tr	FACW	<input type="checkbox"/>		
Total Cover:	70				
Herb Stratum (Plot size: 5 feet)				Prevalence Index worksheet	
<i>Maianthemum dilatatum</i>	10	FAC	<input checked="" type="checkbox"/>	OBL species:	x 1=
<i>Carex obnupta</i>	tr	OBL	<input type="checkbox"/>	FACW species:	x 2=
		-	<input type="checkbox"/>	FAC species:	x 3=
		-	<input type="checkbox"/>	FACU species:	x 4=
		-	<input type="checkbox"/>	UPL species:	x 5=
Total Cover:	10			Total: (A)	(B)
		-	<input type="checkbox"/>	Prevalence Index = B/A =	
		-	<input type="checkbox"/>	Hydrophytic Vegetation Indicators:	
		-	<input type="checkbox"/>	<input checked="" type="checkbox"/> Dominance Test is > 50%	
		-	<input type="checkbox"/>	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹	
		-	<input type="checkbox"/>	<input type="checkbox"/> Morphological Adaptations ¹ (provide supporting data in Remarks or on a separate sheet)	
		-	<input type="checkbox"/>	<input type="checkbox"/> Wetland Non-Vascular Plants ¹	
		-	<input type="checkbox"/>	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹	
Total Cover:				¹ Indicators of hydric soil and wetland hydrology must be present.	
% Bare Ground in Herb Stratum: 90					
Remarks: The majority of dominant species observed at this location were hydrophytic.					Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

SOIL

Sample Point: Wetland

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

Depth (inches)	Soil Color		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-11	10YR 2/1	100			-	-	silt loam	Top 2" root zone
11-20	2.5YR 5/2	60	10YR 6/6	40	C	M	silt loam	Restrictive layer
					-	-		
					-	-		
					-	-		
					-	-		
					-	-		

¹Type: C=concentration D=depletion RM=reduced matrix ²Location: PL=pore lining RC=root channel M=matrix

Hydric Soil Indicators: (applicable to all LRRs unless otherwise noted)		Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input checked="" type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red parent material (TF2) <input type="checkbox"/> Very shallow dark surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: silt loam Depth (inches): 11	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks: The soil observed at this location met NRCS hydric soil indicators.

HYDROLOGY

Wetland hydrology Indicators: Primary Indicators (any one indicator is sufficient)		Secondary Indicators (2 or more required)
<input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Water-stained Leaves (B9) (except MLRA 1, 2, 4A and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along living roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stresses Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water-stained (B9) (MLRA 1,2,4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input checked="" type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Frost-heave Hummocks (D7) <input type="checkbox"/> FAC-neutral (D5)

Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 1 Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 0-11 (include capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Wetland hydrology indicators were observed at this location.

WETLAND DETERMINATION DATA FORM – Western Mountain, Valley Coast Region

Project Site: 2015-04	City/County: Whatcom	Sample Date: 3/27/2015
Applicant/Owner:	State: WA	Sample Point: Upland
Investigator: V. Jackson, K. Poppe, G. Gabrisch	Section/Township/Range: 03/38N/01E	
Landform (hillslope, terrace, etc):	Local Relief (concave, convex, none) :	Subregion: LRR A
Soil Map Unit Name: Histosols (72), Whitehorn silt loam (184), Kickerville silt loam (80), Birchbay silt loam (12, 14)		NWI Classification:
Are climatic/hydrologic conditions on the site typical of this time of year? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (if no, explain in Remarks)		
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> significantly disturbed?		Are "Normal Circumstances" present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Are Vegetation <input type="checkbox"/> , Soil <input type="checkbox"/> , or Hydrology <input type="checkbox"/> 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 <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: Upland adjacent to Wetland 2015-04. Positive indicators for all three parameters were not observed at this location.	

VEGETATION

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Indicator Status	Dominant Species?	Dominance Test worksheet	
<i>Betula papyrifera</i>	60	FAC	<input checked="" type="checkbox"/>	Number of Dominant Species that are OBL, FACW, or FAC:	3 (A)
<i>Pseudotsuga menziesii</i>	30	FACU	<input checked="" type="checkbox"/>		
<i>Alnus rubra</i>	20	FAC	<input type="checkbox"/>		
<i>Thuja plicata</i>	5	FAC	<input type="checkbox"/>		
<i>Sorbus sp.</i>	tr	-	<input type="checkbox"/>	Total number of dominant species across all strata:	4 (AB)
Total Cover:	1.15				
Sapling/Shrub Stratum (Plot size: 15 feet)				Percent of dominant species that are OBL, FACW, FAC:	75 (A/AB)
<i>Rubus spectabilis</i>	60	FAC	<input checked="" type="checkbox"/>		
<i>Ilex aquifolium</i>	5	FACU	<input type="checkbox"/>		
<i>Sambucus racemosa</i>	tr	FACU	<input type="checkbox"/>	Prevalence Index worksheet	
		-	<input type="checkbox"/>	OBL species:	x 1=
		-	<input type="checkbox"/>	FACW species:	x 2=
Total Cover:	65			FAC species:	x 3=
Herb Stratum (Plot size: 5 feet)				FACU species:	x 4=
<i>Maianthemum dilatatum</i>	100	FAC	<input checked="" type="checkbox"/>	UPL species:	x 5=
		-	<input type="checkbox"/>	Total:	(A) (B)
		-	<input type="checkbox"/>	Prevalence Index = B/A =	
		-	<input type="checkbox"/>	Hydrophytic Vegetation Indicators:	
		-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Dominance Test is > 50%	
		-	<input type="checkbox"/>	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹	
		-	<input type="checkbox"/>	<input type="checkbox"/> Morphological Adaptations ¹ (provide supporting data in Remarks or on a separate sheet)	
Total Cover:	100			<input type="checkbox"/> Wetland Non-Vascular Plants ¹	
				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹	
				¹ Indicators of hydric soil and wetland hydrology must be present.	
Woody Vine Stratum (Plot size: 30 feet)					
<i>n/a</i>		-	<input type="checkbox"/>		
		-	<input type="checkbox"/>		
		-	<input type="checkbox"/>		
Total Cover:					
% Bare Ground in Herb Stratum: 0					
Remarks: The majority of dominant species observed at this location were hydrophytic.				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

SOIL

Sample Point: Upland

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

Depth (inches)	Soil Color		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10YR 3/4	100			-	-	silt loam	
5-20	5YR 4/6	80	10YR 4/4	20	-	M	silt loam	
					-	-		
					-	-		
					-	-		
					-	-		
					-	-		

¹Type: C=concentration D=depletion RM=reduced matrix ²Location: PL=pore lining RC=root channel M=matrix

Hydric Soil Indicators: (applicable to all LRRs unless otherwise noted) <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epiedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red parent material (TF2) <input type="checkbox"/> Very shallow dark surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
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³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present): Type: Depth (inches):	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks: Soil at this location did not meet NRCS hydric soil indicators. Soil had a 2" duff layer on surface. Soil pit was completely dry.

HYDROLOGY

Wetland hydrology Indicators: Primary Indicators (any one indicator is sufficient)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Water-stained Leaves (B9) (except MLRA 1, 2, 4A and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along living roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stresses Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Water-stained (B9) (MLRA 1,2,4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Frost-heave Hummocks (D7) <input type="checkbox"/> FAC-neutral (D5)	

Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): (include capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Wetland hydrology indicators were not observed at this location.

2015-04 SP wetland

3/27/15 VJ, KP, GG

soil

0-11 10YR 2/1 100% loam
11-20 2.5YR 5/2 (60) 10YR 4/6 (40) ^{sl to} root. layer
dry

roots in top 2 in

alder	80	Salmonberry	50
cottonwood	10	spiraea	tr
birch	5	sl. sedge	tr
cedar	5	maianthemum	10
		red osier	20

hydro

- sat 0-11"
- ponded 1-2" deep within inches of sample

2015-04 SP upland

soil

+2-0 duff

0-5 10 YR 3/4 100%

5-20 10 YR 4/4 (20) 5YR 4/6 (80) st Co

soil completely dry

veg

alder 20

salmonb 60

birch 60

elderb. tr

D. fir 30

holly 5

cedar 5

maianthemum 100

ash $\frac{5}{8}$ tr~~etc~~