LYNNWOOD LINK EXTENSION

DRAFT ENVIRONMENTAL IMPACT STATEMENT

Ecosystem Resources Technical Report

SOUNDTRANSIT

U.S. Department of Transportation
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Table of Contents

List of Tables

List of Figures

List of Appendices

ACRONYMS AND ABBREVIATIONS

BMP	best management practice
CFR	Code of Federal Regulations
CWA	Clean Water Act
DNR	Washington State Department of Natural Resources
Ecology	Washington State Department of Ecology
EIS	Environmental Impact Statement
ESA	Endangered Species Act
GIS	geographic information system
GPS	global positioning system
HGM	hydrogeomorphic
I-5	Interstate 5
NEPA	National Environmental Policy Act
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OHWM	ordinary high water mark
PAB	palustrine aquatic bed
PCB	polychlorinated biphenyl
PEM	palustrine emergent
PFO	palustrine forested
PGIS	pollution-generating impervious surfaces
PHS	Priority Habitats and Species
PSS	palustrine scrub-shrub
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
Sound Transit	Central Puget Sound Regional Transit Authority
SR	State Route
USFWS	U.S. Fish and Wildlife Service
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WRIA	Water Resource Inventory Area
WSDOT	Washington State Department of Transportation

1 INTRODUCTION

An ecosystem is defined by the interaction between plants, animals, microorganisms, and the physical environment in which they live. Ecosystems consist of living organisms, including humans, and the environment they inhabit. Understanding this relationship is basic to the environmental review process and the assessment of impacts on ecosystems.

This technical report addresses the ecosystem components—aquatic species and habitat; vegetation, terrestrial wildlife, and wildlife habitat; and wetlands—in the vicinity of the Lynnwood Link Extension alternatives. The report describes the affected environment as well as the expected long-term and construction-related impacts on these ecosystem resources for each of the project alternatives. It also discusses measures intended to avoid and minimize impacts, including compensatory mitigation for unavoidable impacts.

This report is organized into four main parts, beginning with a summary of data-gathering activities, identification of related laws and regulations, definition of the study area, and assumptions (Chapter 1); followed by Chapter 2, Study Objectives and Methods; Chapter 3, Affected Environment; and Chapter 4, Environmental Consequences. Appendices A through D provide additional project-related information and site photographs.

1.1 Data Gathered

The Central Puget Sound Regional Transit Authority (Sound Transit) performed a literature and data review to identify and characterize potentially affected resources in and near the project area. Before the field reconnaissance, existing documentation and information were compiled and reviewed so that the reconnaissance effort could focus on verifying data and filling information gaps. Existing ecosystem resource information was gathered from many local, state, and federal agencies. These information sources included published and unpublished reports, maps, Web sites, aerial photographs, and communication with agency staff familiar with resources within the project vicinity. The data sources are listed in the following subsections.

1.1.1 Agency and Public Contacts

Sound Transit contacted the following local jurisdictions:

- City of Seattle
- City of Shoreline
- City of Mountlake Terrace
- City of Lynnwood

1.1.2 Maps and Existing Documentation

Maps and other existing documents were an important resource used to identify ecosystem features within the project vicinity. The following resources were reviewed:

- National Wetlands Inventory (NWI) data (U.S. Fish and Wildlife Service [USFWS])
- Natural Resources Conservation Service (NRCS) Soil Survey maps
- Priority Habitats and Species (PHS) data (Washington Department of Fish and Wildlife [WDFW])
- SalmonScape fish data and maps (WDFW)
- StreamNet data and maps (StreamNet)
- City of Seattle *State of the Waters 2007* report (City of Seattle 2007)
- Basin characterization reports of Thornton Creek/West Lake Washington (Tetra Tech/KCM 2004a) and McAleer Creek/Lyon Creek (Tetra Tech/KCM 2004b)
- Stream habitat analysis for the City of Lynnwood (Jones and Stokes 2000)
- Swamp Creek Urban Growth Area Drainage Needs Report, including Scriber Creek Subbasin (Snohomish County 2002)
- *Salmon and Steelhead Habitat Limiting Factors Report for the Cedar-Sammamish Basin* (Kerwin 2001)
- Washington State Department of Natural Resources (DNR) Natural Heritage Program database
- *A Catalog of Washington Streams and Salmon Utilization, Volume 1, Puget Sound Region* (Williams et al. 1975)
- Critical area maps from local jurisdictions (Cities of Seattle, Shoreline, Mountlake Terrace, Lynnwood, King County, and Snohomish County)
- *Sound Transit 2 Mitigation: Impact Summary and Analysis Memorandum*, as well as geographic information system (GIS) data (ESA Adolfson 2010)
- Aerial photography of the project corridor (including the King County aerial photography database or Google Earth database)
- Regulatory compliance documents, such as the *North Link Light Rail Transit Project Final Supplemental Environmental Impact Statement* (Sound Transit 2006), critical area studies, wetland delineation reports, and stream studies by other agencies or consulting firms, as available
- Lists of listed and proposed endangered and threatened species and critical habitat, candidate species, and species of concern in King and Snohomish counties (USFWS)
- Endangered Species Act Status of West Coast Salmon and Steelhead List (NOAA Fisheries Service)
- Salmon Critical Habitat Designation Maps (NOAA Fisheries Service)
- USFWS Critical Habitat Maps for Threatened and Endangered Species
- List of Migratory Birds Protected by the Migratory Bird Treaty Act

1.2 Guiding Regulations, Plans, and/or Policies

Wetlands, vegetation, aquatic species and their habitat, wildlife and their habitat, and threatened and endangered species that may be affected by project activities are subject to the following regulations, plans, and policies:

Federal

- National Environmental Policy Act (NEPA)
- Sections 404, 402, and 401 of the Clean Water Act (CWA)
- Section 7 of the Endangered Species Act (ESA)
- Magnuson-Stevens Fishery Conservation and Management Act
- Bald and Golden Eagle Protection Act
- Migratory Bird Treaty Act
- Protection of Wetlands, Presidential Executive Order 11990
- Final Rule on Compensatory Mitigation for Losses of Aquatic Resources (2008)
- Corps of Engineers Wetland Delineation Manual (1987)
- *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region, Version 2.0* (Corps 2010)
- Coastal Zone Management Act

State

- Washington State Environmental Policy Act (SEPA)
- Hydraulic code (Washington Administrative Code [WAC] Chapter 220-110)
- Shoreline Management Act
- Washington State Growth Management Act
- Protection of Wetlands, Governor’s Executive Order 89-10
- Protection of Wetlands, Governor’s Executive Order 90-04
- Water Pollution Control Act 90.48 Revised Code of Washington (RCW)
- Wetland Mitigation in Washington State (Ecology et al. 2006)

Local

- Critical Area Ordinances for local jurisdictions (Cities of Seattle, Shoreline, Mountlake Terrace, and Lynnwood)

Miscellaneous

- *Thornton Creek Draft Watershed Action Plan* (Thornton Creek WMC 2001)
- *Greater Lake Ballinger/McAleer Creek Watershed Study Draft Strategic Action Plan* (Otak et al. 2009)
- Sound Transit Environmental Policy (April 2004)
- Sound Transit Executive Order No. 1, Establishing a Sustainability Initiative for Sound Transit (2007)
- Sound Transit Sustainability Plan (June 2011)

1.3 Study Area

1.3.1 Aquatic Species and Habitat

The study area for aquatic species and habitat includes all streams within 200 feet of the project alternatives or features; however, the description of the affected environment will acknowledge ecosystem features such as streams or natural corridors that are partly within or cross through the field reconnaissance survey area. For example, for streams, the study area will extend up to 100 feet upstream to 300 feet downstream (per WAC 73-201A-400) from where project limits cross the stream, as well as the entire stretch of any stream paralleling the project within 200 feet of the edge of the alternative.

1.3.2 Vegetation, Terrestrial Wildlife, and Wildlife Habitat

The study area for vegetation and wildlife habitat includes the project alignment or related facility footprint (i.e., the area in which clearing, grading, and the operation of construction machinery would disturb existing habitat) plus all areas within 200 feet of the project alternatives. This is the area in which project construction could affect vegetation cover and habitat quality for terrestrial wildlife species that may occur in the area. To evaluate wildlife potentially affected by project-related noise and human activity, project biologists also reviewed documented occurrences of sensitive wildlife species within 0.25 mile of the project alternatives.

1.3.3 Wetlands

The study area for wetlands encompasses the area within 200 feet of either side of the project alternatives or features. Within this area, a field reconnaissance survey was conducted to identify, map, and describe wetlands. The field reconnaissance survey area consisted of public rights-of-way administered by the Washington State Department of Transportation (WSDOT) or other public agencies within the study area. Portions of wetlands that extend beyond the field reconnaissance survey area and other potential wetlands outside of this survey area were identified based on visual observation from public areas during the field survey; current local, state, and federal wetland maps;

critical area reports; and aerial photographs. Wetland descriptions in this assessment include those wetlands that are partly within or cross through the study area.

1.4 Assumptions

1.4.1 Impact Assessment

This ecosystems impact assessment is based on examining the data from overlaying the conceptual designs for the light rail alternatives onto ecosystem resource base maps and applying an additional buffer (10 to 12 feet) along portions of the alignment to account for other features such as noise walls and retaining walls. The project footprint includes the guideway, station footprints (including parking), roadway improvements, storm drainage ponds, and ancillary features. Not all areas within the 10- to 12-foot analytical buffer on the project footprint would be subject to long-term impacts; some areas would be unaffected under the light rail alternatives or would be subject only to temporary impacts during construction. The acreage values resulting from this analytical approach provide a reasonable indication of the nature and magnitude of potential impacts and reflect differences among alternatives. To provide a conservatively high estimate of impacts, all impacts within these areas are considered long-term effects for this analysis. Sound Transit will re-evaluate this assumption and identify detailed temporary construction limits during the Final Environmental Impact Statement (EIS) and/or the permitting phase to distinguish which ecosystem resources could be restored. Although detailed construction limits are not defined at this early phase in the project design, potential construction limits have been estimated in the vicinity of streams, stream buffers, wetlands, and wetland buffers. These consist of areas where temporary impacts could extend beyond the analytical buffer defined for the analysis of long-term impacts. For the Draft EIS discussion on temporary construction impacts on vegetation, it is assumed that the level of temporary construction impacts would be commensurate with the level of long-term impacts.

The elevated guideway may create a rain shadow effect and in some cases may have a low clearance that could limit sunlight to vegetation underneath. This analysis conservatively assumes that the area under the elevated guideway would be a long-term impact on wetlands, wetland buffers, riparian buffers, and vegetation because of shading and precipitation interception from the structure. However, shrubs and herbaceous plants may be able to grow in some areas where the guideway is high enough above the ground and where stormwater runoff from the guideway can be directed to underlying plants. Sound Transit will re-evaluate this assumption during the Final EIS and/or the permitting phase to identify specific situations where ecosystem resources under the elevated guideway do not have a long-term impact and could be restored. Estimating this impact is complicated and depends on multiple variables, such as slope, aspect, soil conditions, and stormwater dispersion from the elevated guideway. All these variables make for a complicated impact analysis that exceeds the site and design information available during the Draft EIS. It is assumed that permanent impacts on wetlands associated with elevated sections of the alternatives can be avoided or further minimized during final design and construction.

This analysis also assumes that, with one possible exception, any streams crossed by the elevated guideway would be spanned with columns sited outside of the ordinary high water mark (OHWM). This exception is Scriber Creek within the Scriber Creek wetland complex; the stream lacks a defined channel and it is not possible to determine the exact location of the OHWM. Analyses in this report also assume that no new culverts would be added in any fish-bearing streams and existing culverts in fish-bearing streams would not be extended.

1.4.2 Site Restoration

For purposes of analysis and discussion of temporary construction impacts, Sound Transit assumes that areas supporting native upland or wetland vegetation and riparian corridors located outside of the project limits would be restored after construction is completed. Site restoration features would be installed immediately following construction in each project segment. The length of time that would be required for site restoration to effectively replace pre-project wetland functions would vary.

1.4.3 Avoiding and Minimizing Impacts on Sensitive Ecosystem Resources

Sound Transit assumes that best management practices (BMPs) would be implemented at appropriate locations and that they would perform as intended to avoid or minimize impacts. Also, where possible, project features would be designed and located to avoid or minimize impacts on sensitive resources. For example, support columns and fill slopes would be situated outside of sensitive areas to the maximum extent practicable. Appendix A provides a compilation of BMPs that could be used to avoid or minimize project construction and operational impacts on sensitive ecosystem resources, including state and federal protected species and their habitats, wetlands, and aquatic resources. These BMPs are either required by state or federal agencies to obtain the permits that would be necessary for the project or may be required to comply with permit conditions.

2 STUDY OBJECTIVES AND METHODS

This chapter describes the objectives and methods used to study the aquatic species and habitat; vegetation, terrestrial wildlife, and wildlife habitat; and wetland resources. Sound Transit and the Federal Transit Administration also prepared and circulated the *Lynnwood Link Technical Methodologies Report* in April 2012, and invited cooperating and participating agencies to review and comment. The following discussion summarizes the approach defined in the original methodologies report, but also incorporates further detail that became available after field surveys and other reconnaissance were complete.

2.1 Aquatic Species and Habitat

2.1.1 Study Objectives

This report is intended to provide information in support of Sound Transit's NEPA and SEPA analyses, assist project planning, and facilitate permitting. Discussions in this report identify and describe aquatic habitats and species in the study area, evaluate the potential impacts of each alternative within each segment, and describe measures to avoid, minimize, or compensate for impacts.

2.1.2 Methods

Aquatic species and habitat (streams) were identified through existing maps and documents, communication with local municipality staff, and a field reconnaissance. State and local regulations and guidance were reviewed to assist in identifying stream types and to confirm project compliance with existing laws.

Review of Existing Information

Sound Transit reviewed existing information to identify and characterize aquatic species and habitats that would be potentially affected by the project (see Section 1.1.2). Sources were reviewed to collect information regarding the presence of resident and anadromous fish species and habitat (streams) near the study area. For this analysis, fish species with the potential to be present in a particular stream segment (based on the species' range, habitat associations, and expected upstream extent of use in the stream in question) were assumed to be present, unless their absence was documented. Existing maps and documentation were gathered, reviewed in the office, and then evaluated in the field within the reconnaissance survey area. Existing digital GIS data were gathered from the Cities of Seattle, Shoreline, Mountlake Terrace, and Lynnwood. GIS data from previous reconnaissance work performed for the Sound Transit 2 light rail projects (ESA Adolfson 2010) were also reviewed.

Agency Coordination

Staff members from the Cities of Seattle, Shoreline, Mountlake Terrace, and Lynnwood were contacted regarding their critical area maps and any other resources that may have been identified subsequent to finalization of these maps.

Identification of Threatened, Endangered, and Candidate Species

Sound Transit reviewed several data sources to determine the known or expected presence of ESA-listed threatened or endangered species in project area streams, or of species that are proposed for listing. Sources included online data from SalmonScape (WDFW 2012a) and PHS (WDFW 2012b), as well as reports prepared by the City of Seattle (2007), Tetra Tech/KCM (2004a, 2004b), Jones and Stokes (2000), and Kerwin (2001). The potential for individual species to use habitats in the Lynnwood Link Extension study area was evaluated based on documented observations and the known or expected upstream extent of each species' use of each stream.

Stream Classifications and Buffer Width Designations

Streams in the study area were assigned preliminary classifications based on the systems used by the Cities of Seattle[1], Shoreline, Mountlake Terrace, and Lynnwood, respectively. Each of these stream classification systems classifies and assigns protective buffers to streams based on the presence of fish and whether water flow is perennial or seasonal. Each system is hierarchical; that is, a stream is assigned to a particular category only if it does not meet the criteria of any higher ranking categories.

The purpose of the preliminary assignments in this document was to identify stream buffer areas that could be affected under the light rail alternatives to allow a comparison of the potential effects of the alternatives. For stream segments that may be affected by project construction, stream classification determinations will be made in accordance with the applicable local jurisdiction's critical areas ordinance during the Final EIS or permitting phase of this project. These determinations will also be informed by determinations of presumed fish use according to WAC 222-16-031.

The categories of the City of Seattle classification system (Seattle Municipal Code 25.09.020) are as follows:

- **Type 1:** Waters inventoried as "shorelines of the state" under RCW Chapter 90.58, but not including periodically inundated areas of their associated wetlands
- **Type 2:** Segments of natural waters that have high value to fish for spawning, rearing, or migration (i.e., having a defined channel width of at least 20 feet and a gradient less than 4 percent), or that are used for off-channel habitat
- **Type 3:** Segments of natural waters that have moderate to slight value to fish for spawning, rearing, or migration (i.e., having a defined channel width of at least 2 feet and a gradient less than 16 percent)

[1] Only applicable to development on publicly or privately owned parcels.

- **Type 4:** Segments of natural waters with perennial flow, lacking fish habitat
- **Type 5:** Segments of natural waters with seasonal flow only, lacking fish habitat

The categories of the City of Shoreline classification system (Shoreline Municipal Code 20.80.470) are as follows:

- **Type I:** Streams identified as "shorelines of the state" under the City's Shoreline Master Program
- **Type II:** Streams that are used by or that have habitat value for salmonids
- **Type III:** Streams with a channel width of at least 2 feet that are not used by salmonids
- **Type IV:** Streams with a channel width less than 2 feet that are not used by salmonids
- **Piped stream segments:** Segments of streams, regardless of their type, that are fully enclosed in an underground pipe or culvert

The categories of the City of Mountlake Terrace classification system (Mountlake Terrace Municipal Code 16.15.080) are as follows:

- **Class I:** Natural streams identified as "shorelines of the state" under the City's Shoreline Master Program
- **Class II:** Natural streams that have documented or significant potential for anadromous fish use
- **Class III:** Natural streams that are not used by anadromous fish
- **Class IV:** Natural streams with a channel width less than 2 feet that are not used by salmonid fish
- **Class V:** Natural streams that are seasonal and do not contain fish

The categories of the City of Lynnwood classification system (Lynnwood Municipal Code 17.10.060) are as follows:

- **Category I:** Scriber Creek, Swamp Creek, Lunds Creek, and Halls Creek
- **Category II:** Streams that flow year-round or that are used by salmonids
- **Category III:** Streams that are naturally intermittent and are not used by salmonids

Cities have jurisdiction over stream buffers, which are regulated through each City's Critical Areas Ordinance. Table 2-1 lists the stream buffer widths for the various stream classifications. The distances presented below are minimum requirements; wider buffers may be required in response to site-specific conditions (e.g., the presence of ESA-listed fish species) or the type and intensity of proposed uses.

Table 2-1. Minimum Buffer Requirements for Streams in the Study Area by Local Jurisdiction

Jurisdiction	Stream Classification	Buffer Requirement (feet)
City of Seattle[a]	Type 1	100 feet
	Type 2/3 – anadromous fish	75 feet
	Type 2/3 – no anadromous fish	50 feet
	Type 4	50 feet
	Type 5	50 feet
City of Shoreline[b]	Type I	115 feet
	Type II	75 feet
	Type III	35 feet
	Type IV	25 feet
	Piped	10 feet
City of Mountlake Terrace[c]	Class I	150 feet
	Class II	100 feet
	Class III	65 feet
	Class IV	50 feet
	Class V	Based on review
City of Lynnwood[d]	Category I	100 feet
	Category II	60 feet
	Category III	35 feet

[a] Seattle Municipal Code 25.09.020 (D5) and 25.09.200.A.3.d.1. Only applicable to development on publicly or privately owned parcels.
[b] Shoreline Municipal Code 20.80.470 and 20.80.480
[c] Mountlake Terrace Municipal Code 16.15.080 and 16.15.090
[d] Lynnwood Municipal Code 17.10.060 and 17.10.061

Stream Determination and Field Reconnaissance

A detailed field reconnaissance survey was conducted in the study area to identify, map, and describe aquatic species (fish) and habitat (streams) within the WSDOT or other public rights-of-way. General information was collected in the field and stream courses were estimated and mapped using global positioning system (GPS). These documented streams will be included in the Draft EIS aquatic species and habitat findings.

Streams or potential streams outside of the WSDOT or other public rights-of-way were identified based on field reconnaissance from public areas; current local, state, and federal habitat maps and reports; and aerial photographs. These areas outside of the WSDOT or other public rights-of-way that appear to be streams will be included in the Draft EIS stream findings to provide a conservative estimate of the alternatives' impacts.

Reconnaissance-level aquatic habitat surveys were conducted 300 feet downstream and 100 feet upstream of each proposed stream crossing, and along the entire stretch of any stream paralleling the project within 200 feet from the edge of an alternative. Aquatic habitat suitability (functional status) was evaluated based on fish life histories, spawning and rearing habitat requirements, seasonal use, and field observations. The following stream habitat information was obtained during a pre-field review of existing literature, supplemented by qualitative observations gathered during the field reconnaissance: overall rating, water quality, instream habitat, riparian habitat, and anthropogenic factors. Additionally, aquatic species habitat was described, when possible and applicable, in a subbasin context. Habitat was assessed with the assumption that anadromous fish may one day be able to access the area even if they cannot under present conditions. To the extent information was currently available or could be readily ascertained in the field, downstream impediments to fish passage were identified for each stream reach.

Mapping

Each stream identified in the study area received a unique identifier that was tracked in a GIS database. For streams identified during the field reconnaissance, the OHWM was estimated and mapped using GPS. Streams that extend beyond the field reconnaissance survey area and other previously mapped streams outside of the WSDOT or other public rights-of-way were also incorporated into the GIS database. The OHWMs of all streams that may be affected by project construction will be delineated during the Final EIS or permitting phase of this project. Final stream classification determinations, in accordance with local jurisdictions' critical areas ordinances, will also be made at that time.

Impact Assessment

To evaluate the impacts on aquatic resources, the project and construction limits were overlain onto ecosystem resource base maps. The project limits include the guideway, station footprints (including parking), roadway improvements, storm drainage ponds, and ancillary features. Impact areas were determined as the area of intersection between the project and construction limits and the stream and/or buffers. This assessment also considered loss of riparian function (based on the amount of clearing, filling, and/or excavation as a result of the project) and other direct and indirect impacts on streams. The impacts assessment for aquatic resources also considered differences in the amount of impervious surface under the alternatives.

2.2 Vegetation, Terrestrial Wildlife, and Wildlife Habitat

2.2.1 Study Objectives

This report is intended to provide information in support of Sound Transit's NEPA and SEPA analyses, assist project planning, and facilitate permitting. Discussions in this report identify and describe vegetation and wildlife resources in the study area, evaluate the potential impacts of each alternative within each segment, and describe measures to avoid, minimize, or compensate for impacts.

2.2.2 Methods

To establish the basis for analyzing the effects on vegetation, terrestrial wildlife, and wildlife habitat, Sound Transit delineated and classified land cover on aerial photographs and visited a sample of these areas during the field reconnaissance survey. Major plant communities and habitat types were identified and classified based on the structural categories defined in *Wildlife-Habitat Relationships in Oregon and Washington* (Johnson and O'Neil 2001).

To support the analysis of effects on wildlife, Sound Transit identified wildlife species that are associated with the land cover types in the study area, and with specific habitat elements within each cover type. Sound Transit also assessed locations of known ecologically sensitive areas and important wildlife occurrences that may be sensitive to disturbance from noise or human presence. This information was supplemented with data gathered during the field reconnaissance visits.

Sound Transit reviewed Natural Heritage Program data from DNR for known locations of rare plant species or rare plant communities within the study area. They also studied PHS data for known locations of wildlife species that are listed or proposed for listing under ESA or that are a management concern for WDFW, as well as habitats with unique or significant value. Each major plant community and habitat type that exists in the study area is described in this report. The relative function of each plant community in providing habitat for wildlife is described based on reconnaissance-level field observations, literature review (including *Wildlife-Habitat Relationships in Oregon and Washington* [Johnson and O'Neil 2001]), professional opinion, and agency consultation. Sensitive information regarding the locations of proposed, candidate, and listed species and habitats is not mapped to protect the integrity of this information.

Biologists conducted a limited field reconnaissance to verify habitat mapping and to observe wildlife species in the vicinity of the study area. A wildlife biologist conducted a site visit on March 30, 2012. Biologists conducting site visits to gather data on wetlands and streams also collected data on wildlife use of the area between March and July 2012. No formal surveys were conducted for any wildlife species. However, if the project alternative site were located within the known or expected range of a particular species, and if habitat for that species were present within the study area, then the species was assumed to be present.

Sound Transit evaluated the potential effects of the proposed action on vegetation and wildlife using a variety of methods and resources, including the following:

- GIS analysis to determine the acreage, type, and location of affected cover types
- Review of existing literature on the effects of project construction, use, and maintenance on vegetation and wildlife
- Review of WDFW management recommendations for priority habitats and species

To evaluate the impacts to vegetation and wildlife resources, project limits were overlain onto ecosystem resource base maps in GIS. The project limits include the guideway, station footprints (including parking), roadway improvements, storm drainage ponds, and ancillary features. Impact areas were determined as the area of intersection between the project limits and land cover.

2.3 Wetlands

This section describes the study objectives and methods used to characterize wetlands within the study area and to identify potential impacts.

2.3.1 Study Objectives

Existing data and previous reconnaissance surveys show that wetlands are located within the project limits for all project alternatives. As a result, specific objectives of this study include the following:

- Identify, map, and describe the existing conditions of the wetlands and wetland buffers located within 200 feet of either side of the proposed project alternatives
- Determine each project alternative's impacts on wetlands
- Describe measures to avoid, minimize, or compensate for impacts

2.3.2 Methods

Wetlands were identified through existing maps and documents, communication with local municipality staff, and a field reconnaissance. Federal, state, and local regulations and guidance were consulted to assist in classifying and rating wetlands and to confirm project compliance with existing laws.

Review of Existing Maps and Documentation

Existing maps and documentation were gathered from a variety of sources (see Section 1.1.2), reviewed in the office, and then evaluated in the field within the field reconnaissance survey area. Existing digital GIS data were gathered from the Cities of Seattle, Shoreline, Mountlake Terrace, and Lynnwood; the USFWS NWI; and Sound Transit (previous reconnaissance performed for the Sound Transit 2 light rail projects [ESA Adolfson 2010]).

Agency Coordination

Sound Transit contacted staff from the Cities of Seattle, Shoreline, Mountlake Terrace, and Lynnwood for their critical area maps and any wetlands that may have been identified subsequent to finalization of these maps. This search included documentation associated with recent permit applications or code violations.

Wetland Determination and Field Reconnaissance

Wetlands were identified in the field reconnaissance survey area (defined as public rights-of-way administered by WSDOT or other public agencies) using criteria provided in the *Corps of Engineers Wetland Delineation Manual* (1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0* (2010). Wetland boundary delineations were not conducted as part of this effort. Instead, wetland boundaries were estimated in the field and mapped using GPS, which were incorporated into the project GIS.

Wetlands that extend beyond the field reconnaissance survey area and other potential wetlands outside of the WSDOT or other public rights-of-way that appear to meet the wetland criteria were also incorporated into the GIS database. Ground-truthing and data collection were not possible for these areas because no rights of entry were obtained for properties outside of the field reconnaissance survey area. Potential wetlands were identified by visual observation from public areas during the field reconnaissance; current local, state, and federal wetland maps; and critical area report figures or plans. Boundaries of potential wetlands were added to the project GIS database by incorporating GIS layers prepared by others or estimating and digitizing boundaries over aerial photographs. All wetlands in the study area will be delineated during the Final EIS and/or permitting phase of this project.

Identified wetlands were classified according to the USFWS *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979) and *A Hydrogeomorphic Classification for Wetlands* (Brinson 1993). The Washington State Department of Ecology's (Ecology) *Washington State Wetland Rating System for Western Washington – Revised* (Hruby 2004) was used to rate wetlands. Wetlands were also rated according to local regulations. The Cities of Seattle, Mountlake Terrace, and Lynnwood use the Ecology rating system (Seattle Municipal Code 25.09.160A, Mountlake Terrace Municipal Code 16.15.080, and Lynnwood Municipal Code 17.10.050), while the City of Shoreline uses its own rating system (Shoreline Municipal Code 20.80.320). Wetland ratings are used to determine required buffer widths and compensatory mitigation ratios. Generally, the required buffer width and compensatory mitigation ratio increase in conjunction with higher wetland ratings.

Additional information on methods used for wetland identification, delineation, classification, rating, and buffer width designation is provided in the Wetland Identification and Survey Report (Appendix B).

Mapping

Each wetland identified in the study area received a unique identifier that was tracked in a GIS database. Wetlands were named based on whether they were field-identified wetlands ("W") or not field-identified/potential wetlands ("PW"), the city they are located in (Seattle = SE, Shoreline = SH, Mountlake Terrace = MT, or Lynnwood = LY), and the order they were encountered in the field (1,2,3, etc.). For example, Wetland WSE2 is the second field-identified wetland in Seattle. The field reconnaissance was conducted moving generally from south to north through the study area.

For wetlands identified during the field reconnaissance, boundaries were estimated and mapped using GPS. Wetland boundaries were not mapped and surveyed. Wetlands that extend beyond the field reconnaissance survey area and other potential wetlands outside of the WSDOT or other public rights-of-way were also incorporated into the GIS database. These included wetlands identified by visual observation from public areas during the field reconnaissance; current local, state, and federal wetland maps; and critical area report figures or plans. These wetland boundaries were added to the project GIS database by adding existing GIS layers or estimating and digitizing boundaries. All wetlands within the study area will be delineated during the Final EIS and/or permitting phase of this project.

Impact Assessment

To evaluate wetland impacts, the project and construction limits were overlain onto ecosystem resource base maps. The project limits include the guideway, station footprints (including parking), roadway improvements, storm drainage ponds, and ancillary features. Impact areas were determined as the area of intersection between the project and construction limits and the wetland and/or buffers. This assessment also considered loss of wetland function (based on the amount of clearing, filling, and/or excavation as a result of the project) and other direct and indirect impacts on wetlands.

3 AFFECTED ENVIRONMENT

3.1 Aquatic Species and Habitat

The Lynnwood Link Extension would be constructed in an urban area where aquatic habitats have already been subjected to a moderate to high degree of alteration. The degree of alteration varies from stream to stream, with the greatest alteration occurring where urban development is the greatest. Some of the smaller streams and headwater reaches have been placed in conveyance systems consisting of pipes and ditches, interfering with natural flow patterns and processes such as groundwater recharge.

3.1.1 Drainage Basin

The study area for the Lynnwood Link Extension is drained by three stream systems: Thornton Creek, McAleer Creek, and Scriber Creek (Figure 3-1a through Figure 3-1c). This map also shows the locations of fish passage barriers within and near the study area, as well as the locations of proposed stream crossings under the light rail alternatives. Salmonid species that are known or expected to occur at locations where project alternatives cross streams are identified in text boxes at those locations on the map. All three streams drain to Lake Washington. These waterways also provide essential fish habitat for federally managed species; such habitat is protected under the Magnuson-Stevens Fishery Conservation and Management Act. Thornton and McAleer creeks drain directly to the lake, while water from Scriber Creek flows to the lake via Swamp Creek and the Sammamish Slough. Lake Washington is the second-largest natural lake in Washington, with a surface area of 22,138 acres. The lake lies at an elevation of 22 feet and has a maximum depth of 214 feet. The major sources of water that enter the lake are the Cedar River (55 percent of the average inflow) and the Sammamish River (27 percent of the average inflow). The remainder of inflow comes from May Creek, Coal Creek, Lyon Creek, McAleer Creek, Thornton Creek, and other smaller streams. The lake drains to Puget Sound through the Lake Washington Ship Canal—an artificial waterway constructed in 1916.

Many species of fish, both native and introduced, inhabit Lake Washington. Discussions in this document focus on salmonids—anadromous[2] salmonids in particular—because these species are a management concern due to habitat degradation and population declines. Salmonids in the Lake Washington watershed are a mix of native and introduced stocks. For example, sockeye salmon (*Oncorhynchus nerka*) that spawn in some areas appear to be descendants of introduced fish while those in others may be native fish (Hendry et al. 1996). Chinook salmon (*O. tshawytscha*) naturally reproduce in many of the watershed streams and are supplemented by hatchery production of fish originally from the Green River (Weitkamp and Ruggerone 2000). Coho salmon (*O. kisutch*) in the watershed also appear to be a mix of naturally produced and hatchery fish (personal communication, K. Walter, Muckleshoot Indian Tribe, March 1, 2013). Chum salmon (*O. keta*) and pink salmon

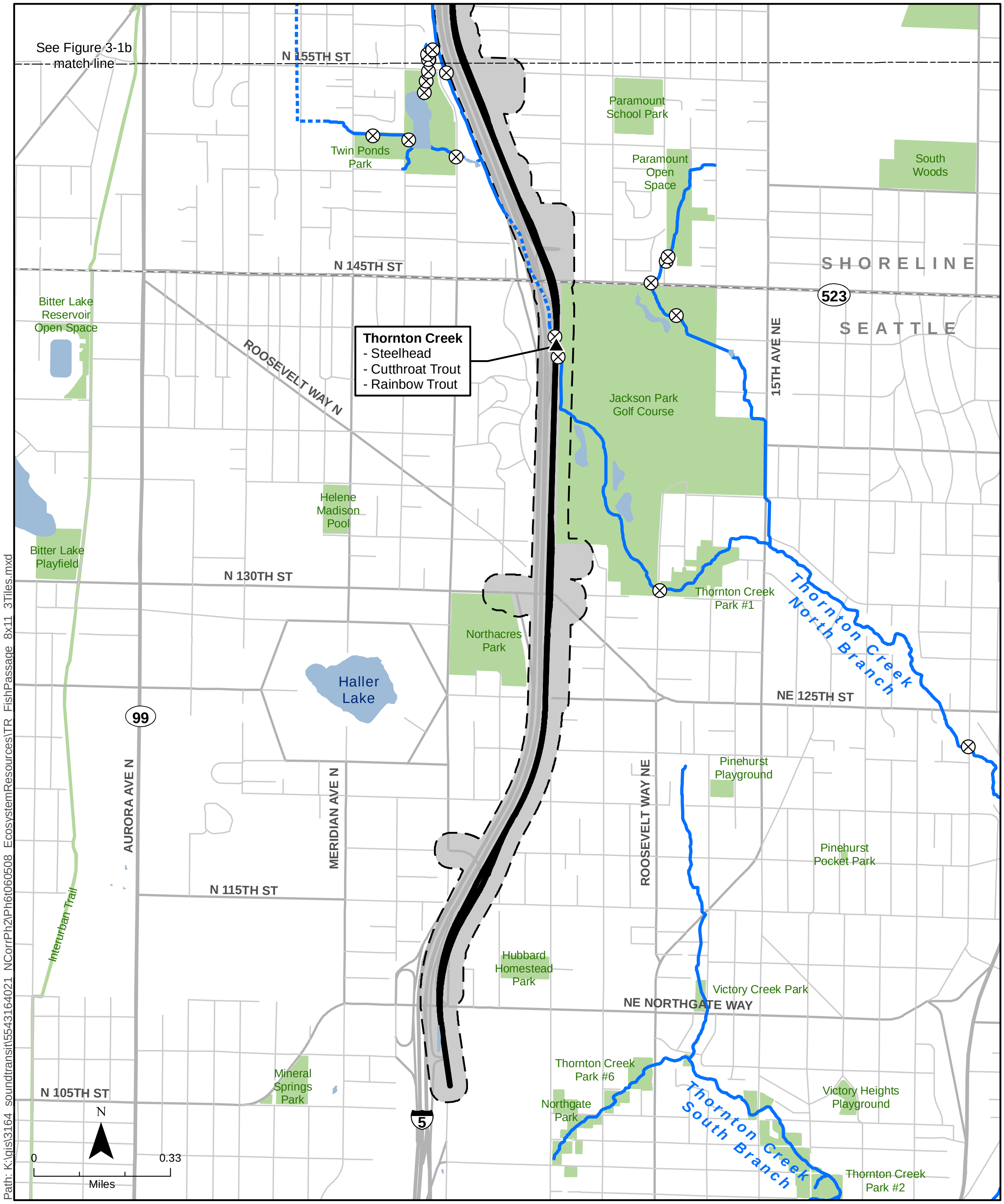
[2] Anadromous fish begin their life in fresh water, migrate to marine waters to reach maturity, and then return to fresh water as adults to spawn.

(*O. gorbuscha*) have also been observed. Rainbow trout (*O. mykiss*) and steelhead trout (the anadromous life form of *O. mykiss)* are a mix of introduced hatchery and native stocks. Cutthroat trout (*O. clarkii*), in both resident and anadromous (i.e., sea-run) forms, are also present in the watershed. Kokanee salmon (a form of sockeye that remains in freshwater habitats throughout its life cycle) are also found in the lake and some of its tributary streams. Several species of introduced fish, such as yellow perch (*Perca flavescens*) and smallmouth bass (*Micropterus dolomeiui*), are very abundant. Other introduced species include tench (*Tinca tinca*) and common carp (*Cyprinus carpio*), both native to Europe. The following paragraphs provide additional information about native salmonids.

Adult Chinook salmon in the study area belong to the Sammamish stock (WDFW 2013). Most spawning takes place in North, Swamp, Bear, Little Bear, Thornton, McAleer, Cottage Lake, and Issaquah creeks, as well as in the Sammamish River (WDFW 2012c). Run sizes fluctuate considerably; between 2001 and 2012, escapement estimates based on counts of live Chinook in Bear Creek and Cottage Lake Creek ranged between 74 and 531 (WDFW 2013). Spawning in Lake Washington tributary streams generally occurs from mid-September through October (WDFW 2012c). Fry emerge from redds during January, February, and March (Celedonia et al. 2008). These juveniles appear to have two rearing strategies: 1) rear in streams until May and then emigrate downstream to lake habitat during May or June; or 2) emigrate shortly after emergence and rear in the lake as fry for 3 to 5 months (Celedonia et al. 2008). Most juvenile Chinook salmon leave Lake Washington and enter Puget Sound in June and July (DeVries et al. 2004).

Steelhead, as well as their resident life form (rainbow trout), are present in the Lake Washington system but are not abundant. Based on chronically low redd counts in Cedar River, Issaquah Creek, and Bear Creek, as well as severe declines in 2000 and 2001, the status of the Lake Washington winter steelhead stock is rated as critical (WDFW 2012c). Steelhead spawn in rivers and tributaries throughout the Lake Washington basin, including Thornton Creek and McAleer Creek, generally between mid-December and early June (WDFW 2012c). Naturally produced juvenile steelhead either migrate to sea or remain in freshwater as resident rainbow trout (Kerwin 2001). Most juvenile steelhead in the Lake Washington basin remain in streams for 1 to 3 years (Kerwin 2001). Steelhead smolts move into Lake Washington from tributary streams in April on their way out of the system. They stay in the lake for a month or two, migrating out before mid-June (Kerwin 2001). Resident rainbow trout are present in some streams all year long.

Coho salmon in the study area belong to the Lake Washington/Sammamish Tribs stock (WDFW 2012c). Based on low escapement values and a long-term negative trend, the stock is rated as depressed (WDFW 2012c). Spawning occurs in nearly all tributaries, including Thornton Creek, McAleer Creek, and Scriber Creek, generally from late October to mid-December (WDFW 2012a). Fry emerge in late winter and rear in freshwater habitats for 12 to 14 months before migrating through Lake Washington to marine habitats in April and May (Kerwin 2001).



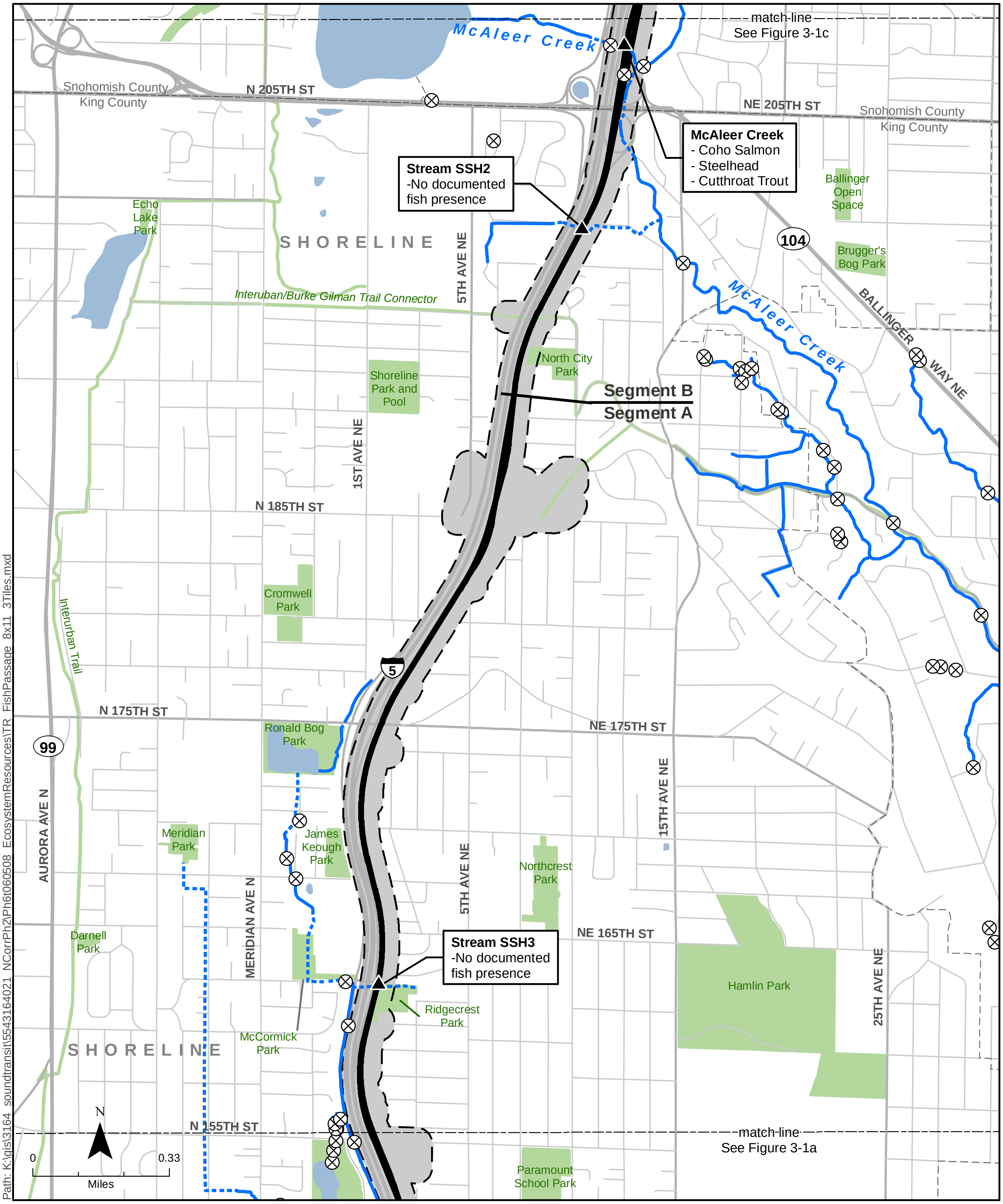
Data Sources: (King County, Snohomish County, WSDOT, Sound Transit, StreamNet)

- Light Rail Alternatives
- Study Area
- City Boundary
- County Boundary
- Park
- Documented or Potential Fish Barrier
- Open Stream
- Piped Stream
- Stream Crossing
- Waterbody

Note: Text boxes where project alternatives cross streams identify the salmonid species known or expected to occur at those specific locations, and are not intended to depict upstream limits of distribution.

Figure 3-1a
Streams and Fish Passage Barriers

Lynnwood Link Extension



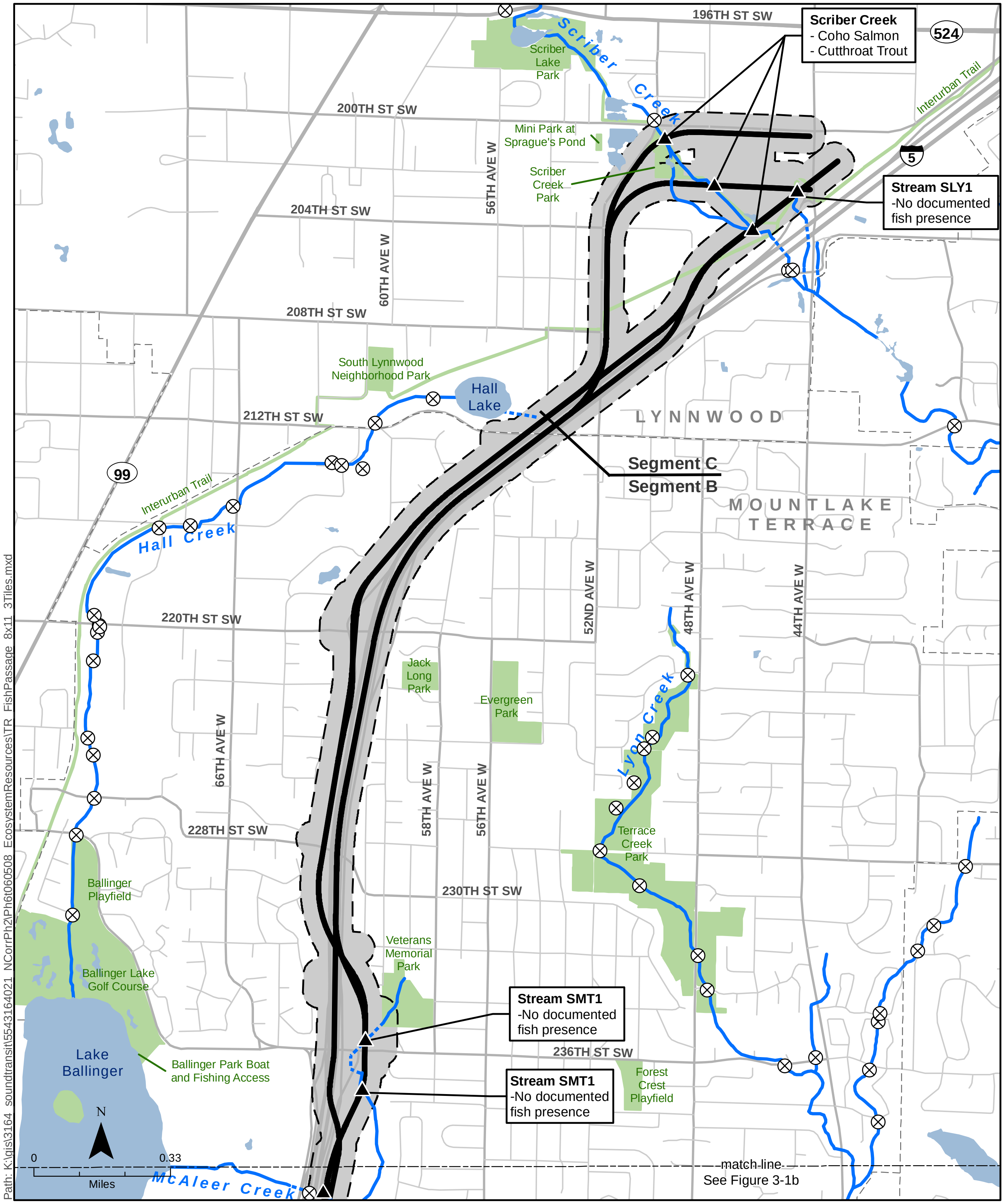
Data Sources: (King County, Snohomish County, WSDOT, Sound Transit, StreamNet)

- Light Rail Alternatives
- Study Area
- City Boundary
- County Boundary
- Park
- Documented or Potential Fish Barrier
- Open Stream
- Piped Stream
- Stream Crossing
- Waterbody

Note: Text boxes where project alternatives cross streams identify the salmonid species known or expected to occur at those specific locations, and are not intended to depict upstream limits of distribution.

Figure 3-1b
Streams and
Fish Passage Barriers

Lynnwood Link Extension



Data Sources: (King County, Snohomish County, WSDOT, Sound Transit, StreamNet)

- Light Rail Alternatives
- Study Area
- City Boundary
- County Boundary
- Park
- Documented or Potential Fish Barrier
- Open Stream
- Piped Stream
- Stream Crossing
- Waterbody

Note: Text boxes where project alternatives cross streams identify the salmonid species known or expected to occur at those specific locations, and are not intended to depict upstream limits of distribution.

Figure 3-1c
Streams and Fish Passage Barriers

Lynnwood Link Extension

Sockeye salmon that use habitats in the study area belong to the Lake Washington/Sammamish Tribs stock (WDFW 2012c). The primary spawning areas for this stock are in the Big Bear Creek system and Issaquah Creek (WDFW 2012c), but sockeye also use nearly all of the larger tributary streams, including Thornton Creek and McAleer Creek. WDFW (2012c) rates the stock as healthy. Between 1991 and 2008, escapement values from Big Bear Creek averaged around 7,400 spawning adults in odd-numbered years and 40,000 adults in even-numbered years (WDFW 2013). Spawning for this stock generally occurs from early September through late December (WDFW 2012c). After emerging from spawning gravel in winter and early spring, juvenile sockeye migrate to Lake Washington, where they rear for 1 to 3 years (Kerwin 2001). Juveniles enter the lake as fry during late winter and early spring, and most rear in the lake for 1 year.

Coastal cutthroat trout in both resident and anadromous forms are present in the Lake Washington basin in moderate abundance. Resident fish are present all year long. Sea-run cutthroat spawn over a long period, from winter through May (WDFW 2013). They seek smaller streams with minimal flow minimal and small substrates; cutthroat trout are commonly found in the uppermost reaches of streams, in areas that are too shallow for other salmonids (WDFW 2013). Most sea-run cutthroat rear in stream habitats for 2 to 3 years before migrating to salt water (WDFW 2013).

Bull trout (*Salvelinus confluentus*) have been observed entering Lake Washington through the fish ladder viewing area at the locks, where every year, one or two fish are seen traveling into the lake. Many researchers believe that these fish are seasonal transient strays rather than fish produced within the system. Surveys to date have not produced conclusive evidence for the presence or absence of bull trout in the Lake Washington system, outside of a self-sustaining population in the Cedar River drainage above Lower Cedar Falls (King County Department of Natural Resources 2000). For regulatory purposes, USFWS assumes that natural production is possible in the system.

3.1.2 Streams in the Study Area

Discussions in this subsection describe the streams that are present in the study area and provide information about fish use, fish habitat quality, and riparian habitat conditions in the streams and their tributaries. Anthropogenic factors that influence habitat quality for each stream are also identified. Information is organized by the three major stream systems in the study area, progressing from south to north. Table 3-1 summarizes the stream information in the study area. Appendix C includes photographs of the streams.

Thornton Creek

The 7,200-acre Thornton Creek basin drains a substantial portion of northeastern Seattle and most of Shoreline. The stream flows generally south and east before discharging to Lake Washington.

Table 3-1. Summary of Streams in the Lynnwood Link Extension Study Area

Stream Name[a]	Stream Index No.[b]	Fish Habitat Status [c]	Local Jurisdiction	Local Jurisdiction Stream Classification	Local Jurisdiction Buffer Width (feet)
Thornton Creek, North Branch	08.0030	Documented	Seattle	Type 3[d]	75[d]
Thornton Creek Tributary (SSH3)	08.0046	Unknown	Shoreline	Piped	10
McAleer Creek Tributary (SSH2)	NA	Unknown (Presumed Potential)	Shoreline	Piped	10
McAleer Creek	08.0049	Documented	Shoreline	Type II	115
McAleer Creek	08.0049	Documented	Mountlake Terrace	Class II	100
McAleer Creek Tributary (SMT1)	08.0050	Potential	Mountlake Terrace	Class III	65
Scriber Creek	08.0061	Documented	Lynnwood	Category I	100
Scriber Creek Tributary (SLY1)	08.0064	Potential	Lynnwood	Category III	35

[a] Streams other than Thornton Creek, McAleer Creek, and Scriber Creek are identified with alphanumeric codes: SYYn. S stands for stream; YY = two-letter code for local jurisdiction (SE = Seattle, SH = Shoreline, MT = Mountlake Terrace, LY = Lynnwood); n = sequential identification number

[b] Water Resource Inventory Area (WRIA) identification numbers according to Williams et al. (1975).

[c] Documented = Fish have been observed in the study area; Potential = Potential fish habitat is present, based on field assessment of stream width and gradient, but stream segments in the study area are upstream of human-caused fish passage barriers; Unknown = No fish presence data are available and stream segments are contained within culverts in the study area.

[d] Only applicable to development on publicly or privately owned parcels within the city of Seattle.

NA = not applicable

Thornton Creek drains the southern half of the study area (south of NE 185th Street, approximately). Segments of the North Branch of Thornton Creek (WRIA No. 08.0030) within and immediately upstream of the Jackson Park Golf Course fall within the study area. Also present in the study area is a small watercourse (WRIA No. 08.0046) that originates in a ravine near Ridgecrest Park east of Interstate 5 (I-5), passes through a culvert under the park and the highway, and joins the North Branch near North 163rd Street, west of I-5. The entire length of the watercourse is piped through the study area. The South Branch of Thornton Creek, also known as Maple Leaf Creek, originates in wetlands near Northgate, North Seattle Community College, and I-5 (City of Seattle 2007). The stream drains the southernmost portion of the study area. The two branches join to form the main stream near the Meadowbrook stormwater detention pond in northeast Seattle. The study area does not include any portions of the South Branch or the main stem of Thornton Creek.

The North Branch of Thornton Creek (hereafter referred to as Thornton Creek in this report) originates near Ronald Bog in Shoreline and flows 5 miles before joining the South Branch. Portions of the stream above and within the study area are as follows, progressing from upstream to downstream:

- After exiting the piped segment immediately south of Ronald Bog, Thornton Creek passes through backyards, roadside ditches, and culverts along and through the I-5 corridor. The stream flows at the surface from approximately North 167th Street through most of the solid waste transfer station, re-enters pipes under the King County Metro bus facility, then flows at the surface most of the way to Twin Ponds (Tetra Tech/KCM 2004a).

- Downstream from Twin Ponds, the creek passes through a small wetland called Peverly Pond and eventually through a concrete-lined channel into a 1,500-foot-long, 72-inch-wide culvert under I-5.
- Downstream of the I-5 culvert, the stream enters the study area, emerging from the I-5 culvert south of North 145th Street and west of 5th Avenue NE, passing through a culvert under 5th Avenue NE, and then flowing in a ditch between 5th Avenue NE and the Jackson Park Golf Course (Tetra Tech/KCM 2004a).

North of the Jackson Park Golf Course, a tributary to Thornton Creek (Stream SSH3) originates near Ridgecrest Park east of I-5. The tributary enters a culvert before crossing the study area and I-5, emptying into Thornton Creek west of the study area.

Anthropogenic Factors

Overall, approximately 59 percent of the Thornton Creek basin is covered by impervious surfaces such as roads, buildings, and parking lots (City of Seattle 2007). In portions of the basin north of the Seattle city limits, the City of Shoreline calculated existing impervious area values ranging between 45 and 48 percent (Tetra Tech/KCM 2004a). Kerwin (2001) estimated the effective impervious area in the basin at 31.9 percent. The City of Seattle (2007) identified the following problematic conditions in the system, due primarily to urban development in the basin:

- Altered hydrology, with high and flashy flows
- Degraded water quality, with temperatures and fecal coliform bacteria frequently at levels above state standards
- Excess nutrients under non-storm flow conditions
- Channel incision and degraded instream habitat, due to restricted channel width and loss of hydrologic connectivity to the floodplain
- Depressed levels of coarse sediment, instream wood, and riparian forest
- Fish passage barriers that limit anadromous fish to 30 percent of the watercourse length
- High pre-spawn mortality rates of coho salmon

Fish Use

The lower reaches of Thornton Creek support spawning anadromous salmonids. Chinook, coho, and sockeye salmon redds have been observed in the North Branch as far upstream as 35th Avenue NE and NE 115th Street, approximately 2.5 miles downstream of the study area (City of Seattle 2007; WDFW 2012a). Individual steelhead trout and chum salmon (the latter likely being strays from other basins [Kerwin 2001]) have also been sighted in the lower portions of the stream (McMillan 2007 *in* City of Seattle 2007). The City of Seattle (2007) identified at least 4 total barriers and 10 partial barriers to fish passage between the study area and the downstream reaches that support anadromous spawning. However, the observation in 2004 of an adult steelhead trout upstream of Twin Ponds suggests that none of these structures, including the culvert under I-5, may present an absolute barrier to fish passage (Tetra Tech/KCM 2004a). Notably, steelhead are renowned for their ability to negotiate what would be considered barriers for most other salmonids (Tetra Tech/KCM 2004a). Moving upstream from the study area, WDFW (2011) characterized the culvert under I-5 as a partial barrier (33 percent passable) to fish passage.

Resident salmonids are also present in the system, including reaches that are within or upstream of the study area. Cutthroat trout have been observed as far upstream as the Jackson Park Golf Course, and rainbow trout have been observed another mile upstream, near Twin Ponds (City of Seattle 2007). According to WDFW (2012b), resident cutthroat trout are expected to be present in Thornton Creek all the way up to Ronald Bog. Native non-salmonid species that use Thornton Creek include threespine stickleback (*Gasterosteus aculeatus*), prickly sculpin (*Cottus asper*), coast-range sculpin (*Cottus aleuticus*), and lamprey (*Lampetra* sp.) (Tabor et al. 2010). Non-native fish species that have been introduced to Thornton Creek, either intentionally or unintentionally, include rock bass (*Ambloplites rupestris*), pumpkinseed (*Lepomis gibbosus*), largemouth bass (*Micropterus salmoides*), and oriental weatherfish (*Misgurnus anguillicaudatus*) (Tabor et al. 2010).

Migratory cutthroat trout are the most abundant salmonid in Thornton Creek, with an average annual adult count of more than 200 live fish on spawning grounds (City of Seattle 2007). Based on carcass counts from 1999 through 2005, the average annual anadromous run size in Thornton Creek is 33 coho, 7 sockeye, and 4 Chinook salmon (City of Seattle 2007). No fish are known or expected to use the tributary (SSH3) near Ridgecrest Park (WDFW 2012a, 2012b).

Water Quality

The main stem and the lower portions of the North and South Branches are listed as impaired water bodies under CWA Section 303(d), based on demonstrated exceedances of state water quality standards for temperature and dissolved oxygen (Ecology 2008). The lowest reaches of the main stem are also listed for fecal coliform bacteria. In addition, Ecology (2008) has identified portions of Thornton Creek as a water of concern for both pH and mercury. All of the listed reaches are downstream of the study area.

Instream Habitat

Instream habitat quality of the North Branch of Thornton Creek within the study area is rated as low, based on channel morphology, sediment regime, and existing physical habitat conditions (City of Seattle 2007). The stream valley in most of this reach has been modified by grading, fill, and excavation, particularly near I-5, where the stream has been straightened and confined. The channel has more sinuosity within the golf course (downstream of the study area), but the banks in many areas are hardened by riprap and the stream cannot migrate. Note that this description is based on surveys that were completed between 1999 and 2004, before stream restoration work was completed within the Jackson Park Golf Course. The habitat benefits of that effort are not reflected in the description (City of Seattle 2007).

Throughout this segment, the channel is mostly eroding and degrading or has been locked into place through bank armoring. Gradients range between 1 and 2 percent. Gravel and sand are the dominant sediment types, and riffles and glides are the dominant habitat types; little instream structure is present to contribute to pool formation. This dearth of instream structure also reduces the channel's capacity to trap and store sediment (City of Seattle 2007). Based on the predominance of fine sediments, spawning habitat quality is considered poor. Because of the presence of overhanging vegetation and relatively deep water, portions of the stream within the study area likely provide suitable rearing habitat for juvenile fish (Tetra Tech/KCM 2004a).

Upstream of the I-5 culvert, Thornton Creek lies outside of the study area and on the opposite side of I-5 from the proposed alignments. The stream course runs alongside the western boundary of the study area, however.

The tributary (Stream SSH3) that originates near Ridgecrest Park east of I-5 is entirely within culverts in the study area and at its confluence with Thornton Creek immediately west of I-5. Upslope (east) of the study area, the drainage basin for Stream SSH3 is approximately 26 acres, well below the 50-acre minimum size for a basin to be considered potential fish habitat in western Washington, per WAC 222-16-031. As noted by Trotter (2000), fish-bearing streams in the western Cascade Mountains of Washington State are generally present in watersheds that are at least 54 acres.

Riparian Habitat

Riparian habitat quality of Thornton Creek within the study area is rated low, based on riparian area width, connectivity, understory and canopy composition, canopy density, and the percentage of the stream shaded by vegetation (City of Seattle 2007). Stream banks in most portions of the study area are dominated by Himalayan blackberry (*Rubus armeniacus*), particularly along the segment that parallels 5th Avenue NE. A 50- to 70-foot-wide strip of vegetation beside the stream along 5th Avenue NE includes red alder (*Alnus rubra*), black cottonwood (*Populus balsamifera*), and scattered patches of immature western redcedar (*Thuja plicata*). This overstory canopy provides shade for the stream during spring and summer (when the trees have leaves), as well as the potential for contributing some woody debris. Within the golf course, the dominant riparian vegetation in the study area consists of non-native plants, turf, and landscaping.

McAleer Creek

McAleer Creek (WRIA No. 08.0049) originates at Lake Ballinger and flows roughly 6 miles to the northeast corner of Lake Washington. The 5,300-acre drainage basin includes portions of Lynnwood, Edmonds, Mountlake Terrace, Shoreline, and Lake Forest Park. Most of the northern portion of the study area (from NE 185th Street in Shoreline, north to about 208th Street SW in Lynnwood) drains to the McAleer Creek system. Areas north of 224th Street SW drain to Lake Ballinger, which empties to McAleer Creek.

Much of McAleer Creek and its tributaries within the study area are contained within culverts. The main stem enters the study area from an open channel through the Nile Temple Golf Course west of I-5. The stream segments in the study area are as follows, progressing from upstream to downstream:

- Culvert under I-5 (440 feet)
- Open channel adjacent to the on-ramp from State Route (SR) 104 westbound to I-5 northbound (350 feet)
- Culvert under the on-ramp (150 feet)
- Open channel in the area enclosed by the cloverleaf off-ramp from I-5 northbound to SR 104 westbound (330 feet)
- 4-foot by 6-foot box culvert under SR 104 (150 feet)
- Channelized open water course in the area enclosed by the cloverleaf on-ramp from SR 104 eastbound to I-5 northbound (400 feet)
- 66-inch-diameter culvert beneath the off-ramp from I-5 northbound to SR 104 (80 feet)

The stream is within the culvert as it exits the study area, briefly resurfacing before entering a 72-inch culvert under Forest Park Drive NE shortly thereafter.

Approximately 1,800 feet south of the I-5/SR 104 interchange, a tributary to McAleer Creek (Stream SSH2) has been identified as passing under I-5 (Tetra Tech/KCM 2004b). This tributary was not catalogued by Williams et al. (1975). After entering a culvert just west of I-5, the stream remains piped for approximately 1,500 feet, resurfacing shortly before its confluence with the main stem near a wastewater pumping station upstream of 15th Avenue NE (Tetra Tech/KCM 2004b). The open-water portions of the stream within the study area, west of I-5, are within concrete-lined ditches along NE 200th Street. During site visits conducted for this analysis, flowing water was observed in this watercourse only during and immediately after rainfall.

North of the I-5/SR 104 interchange, a tributary (WRIA No. 08.0050; Stream SMT1) joins McAleer Creek in the wooded area adjacent to the on-ramp from SR 104 westbound to I-5 northbound. The tributary originates in Veterans Memorial Park northeast of the Mountlake Terrace Transit Center, then flows south through a series of open watercourses and culverts east of I-5. During site visits conducted for this analysis, flowing water was observed in this watercourse only during and immediately after rainfall.

Anthropogenic Factors

In addition to the extensive portions of the stream that are contained within culverts, McAleer Creek has been affected by urban development throughout its basin. Kerwin (2001) estimated the effective impervious area in the basin at 30.5 percent. Tetra Tech/KCM (2004b) calculated the total impervious area for portions of the McAleer Creek basin within the city of Shoreline to be 46 percent. Forested areas provide shade and other vital functions in some areas; in most of the basin, however, riparian habitat includes single-family homes, apartments, and lawns.

Fish Use

McAleer Creek supports anadromous fish as far upstream as Lake Ballinger. Within the study area, portions of McAleer Creek downstream of the confluence with the tributary near the on-ramp from SR 104 westbound to I-5 northbound provide spawning habitat for coho salmon, while those upstream of that point provide rearing habitat (WDFW 2012a). Steelhead and cutthroat trout have been observed spawning in McAleer Creek immediately outside of the study area (Tetra Tech/KCM 2004b). Resident cutthroat trout are present throughout the stream, even upstream of Lake Ballinger (WDFW 2012b).

Chinook salmon have been reported at the flood control system and fish ladder at NE 196th Street between Forest Park Drive NE and 15th Avenue NE, approximately 2,000 feet downstream of the study area (Tetra Tech/KCM 2004b). WDFW (2012b) reported that the species may be present up to 1,000 feet downstream of the study area. Reaches of McAleer Creek approximately 4,900 feet downstream of the study area provide spawning habitat for Chinook salmon and sockeye salmon (WDFW 2012b). King County (2012a) reported that volunteers with the Salmon Watcher Program have consistently seen Chinook, coho, and sockeye salmon in the stream. Kokanee salmon and rainbow trout have also been observed in McAleer Creek, but locations for those observations have not been specified (Kerwin 2001).

The culvert under I-5 may be a migration barrier to juvenile salmonids, preventing the use of Lake Ballinger for rearing (Kerwin 2001). WDFW (2011) characterized the culvert as a partial barrier (67 percent passable). Farther downstream, Tetra Tech/KCM (2004b) identified a 4-foot by 4-foot box culvert under 15th Avenue NE approximately 2,000 feet downstream of the study area as a possible barrier to juvenile fish, due to the velocity of water flowing through the culvert. Based on surveys conducted in 2011, WDFW (2012a) identified the culvert at Forest Park Drive NE as a partial barrier to fish passage. Based on the presence of human-created barriers to fish passage, no fish are known or expected to use either of the McAleer Creek tributaries (Streams SSH2 and SMT1) in the study area (WDFW 2012a, 2012b). However, the basin sizes, channel widths, and stream gradients of both tributaries indicate the potential to support fish in the future.

Water Quality

The lower portions of McAleer Creek are listed as impaired water bodies under CWA Section 303(d), based on demonstrated exceedances of state water quality standards for fecal coliform and dissolved oxygen (Ecology 2008). Lake Ballinger, upstream of the study area, is on the list for contaminants, including polychlorinated biphenyls (PCBs), dieldrin, and 2,3,7,8-TCDD in tissue samples. No portions of McAleer Creek within the study area are listed as impaired or waters of concern.

Sediment samples collected at a site approximately 1 mile upstream of the study area had chemical compounds at concentrations likely to cause adverse effects in aquatic animals living in the sediments (King County 2012a). Sediment samples from a site approximately 0.25 mile downstream of the study area contained pyrene and nickel, but the potential for chemical effects is uncertain due to the contaminant levels (King County 2012a).

Instream Habitat

Immediately downstream of the study area, the instream habitat of McAleer Creek has been rated as poor, based on the preponderance of fine sediments, as well as scouring and incision resulting from bank hardening (Tetra Tech/KCM 2004b). The channel provides poorly defined pool-riffle complexes; the only pool habitat consists of step-pools formed by weirs. The gravel/cobble stream substrate is heavily cemented with sediment, reducing its spawning suitability (Tetra Tech/KCM 2004b). Based on benthic invertebrate samples collected in 2002 and 2003, King County (2012a) rated conditions in McAleer Creek as poor for benthic invertebrates.

The tributary (Stream SSH2) that passes under I-5 south of SR 104 is entirely within culverts in the study area. In addition, the tributary originating in Veterans Memorial Park (Stream SMT1) is partially piped in the study area. The quality of habitat in portions of the stream that are not contained in culverts is generally low. As noted above, however, the basin sizes, channel widths, and stream gradients of both tributaries indicate the potential to support fish in the future.

Riparian Habitat

Riparian habitat quality along the open-channel segments of McAleer Creek and Stream SMT1 in the study area is generally good, dominated by forest canopy that provides shade and the potential for recruitment of woody debris that contributes to channel complexity. The value of the riparian habitat is limited, however, by a lack of connectivity. The open-channel habitat and associated riparian areas of McAleer Creek occur in four discrete segments in the study area, separated by segments that are contained within culverts.

Scriber Creek

Scriber Creek (WRIA No. 08.0061) drains an area of approximately 4,250 acres, including the extreme northern portion of the study area. The stream flows southeast, joining Swamp Creek approximately 2.5 miles downstream of the study area. Swamp Creek flows into the Sammamish River, which empties into the northern end of Lake Washington.

The study area includes approximately 2,000 feet of the main stem of Scriber Creek. For much of its length in the study area, the stream channel is braided and indistinct as it flows through the large wetland complex (Wetland WLY4) south and west of the Lynnwood Transit Center. The stream forms a defined channel as it exits the study area, flowing southeast and under I-5. Also present in the study area is an unnamed, intermittent tributary (WRIA No. 08.0064; Stream SLY1) that flows southward along the eastern edge of the Lynnwood Transit Center. The channel flows through a small patch of forest vegetation (the upper part has been recently planted) before it enters a culvert under the I-5 on-ramp and joins Scriber Creek southeast of I-5.

Anthropogenic Factors

Scriber Creek subbasin is the most highly developed of the Swamp Creek subbasins. Commercial development and transportation corridors account for approximately 40 percent of the subbasin, and medium-density single-family development covers another approximately 30 percent

(Snohomish County 2002). The effective impervious area in the subbasin is approximately 40 percent (Snohomish County 2002). Jones and Stokes (2000) identified untreated runoff from roads and new construction as a likely source of excessive fine sediment in the portion of Scriber Creek that falls within the study area. Street runoff from roads upstream of the study area also conveys oil and other pollutants to the stream system.

Fish Use

Anadromous salmonids have been observed in Scriber Creek, but sources differ about their habitat use as far upstream as the study area. WDFW (2012a) reported that coho salmon occur in Scriber Creek approximately 500 feet downstream of the study area, below the culvert under I-5. WDFW (2011) characterized the culvert as a partial barrier (67 percent passable) to fish passage. The City of Lynnwood (2004), however, reported sightings of adult coho salmon in Scriber Creek as far upstream as Highway 99, approximately 1 mile above the study area. Stream reaches approximately 1,500 feet downstream of the study area provide spawning habitat for coho salmon (WDFW 2012a). Chinook salmon have been observed approximately 3,000 feet downstream of the study area; the nearest stream reaches that provide spawning habitat for Chinook salmon are in Swamp Creek, approximately 2.5 miles downstream. Winter-run steelhead have been observed in Swamp Creek but not in Scriber Creek (Snohomish County 2002; WDFW 2012a). There are no reports of kokanee above the mouth of Swamp Creek and no recent validated reports of bull trout in the Swamp Creek subbasins (Snohomish County 2002). WDFW (2012a) identified a total barrier to anadromous fish passage in a wooded area near 209th Place SW, approximately 2,000 feet downstream of the study area. As noted above, however, the identification of this site as a total barrier is not supported by reported sightings of adult coho salmon as far as 1 mile upstream of the study area.

Resident fish species in Scriber Creek include cutthroat trout, which have been documented throughout the study area, as far upstream as Scriber Lake Park (WDFW 2012b). Largemouth bass and yellow perch have been observed in Scriber Lake upstream of the study area (Jones and Stokes 2000).

The tributary east of the Lynnwood Transit Center (Stream SLY1) is non-fish-bearing (Snohomish County 2002; WDFW 2012a).

Water Quality

Scriber Creek is not on the 303(d) list of impaired waters in the State of Washington. Possible water quality problems may be indicated, however, by evidence of hydrocarbon pollution (oily sheen and odor) and the abundance of pollutant-tolerant stream invertebrates (Jones and Stokes 2000). Stream temperatures measured in the study area fall within the acceptable range for salmonid fish use, but the lack of shade-producing vegetation increases the risk of elevated temperatures (Jones and Stokes 2000).

Instream Habitat

The main stem reach in the study area is dominated by the large scrub/shrub wetland adjacent to the park-and-ride lot. Salmon spawning habitat conditions within this reach are poor due to limited canopy and vegetative cover, the presence of bank armoring, and the abundance of silt and other fine substrates (Jones and Stokes 2000). Side channels and other low-velocity areas may provide good rearing habitat, however (City of Lynnwood 2004). The tributary east of the Lynnwood Transit Center (Stream SLY1) is highly channelized and does not flow at the surface for most of its length. The primary source of flow in the tributary is urban runoff, and habitat quality is generally poor. Based on the presence of human-created barriers to fish passage, Stream SLY1 is not currently known or expected to support fish. Based on its basin size, channel width, and stream gradient, however, Stream SLY1 may have the potential to support fish in the future.

Riparian Habitat

Riparian vegetation in the study area consists of a dense growth of salmonberry (*Rubus spectabilis*) and Himalayan blackberry, with a few red alder, western redcedar, bigleaf maple (*Acer macrophyllum*), and Pacific flowering dogwood (*Cornus nuttallii*). Jones and Stokes (2000) found little to no large woody debris in the stream and determined that the potential for large woody debris recruitment is low.

3.1.3 Threatened, Endangered, and Candidate Species

Four aquatic species that have federal or state listing status, or that are candidates for listing, may use habitats in the study area. These species are described below.

Puget Sound Chinook Salmon

The Puget Sound evolutionarily significant unit of Chinook salmon is listed as threatened under the ESA and is a State Candidate species. Chinook salmon are present in the lower reaches of Thornton, McAleer, and Scriber creeks. In all three streams, the reaches where Chinook salmon have been observed are separated from the study area by total or partial fish passage barriers. The known distribution of Puget Sound Chinook salmon in the project vicinity is as follows:

- Thornton Creek: Observed spawning approximately 2.5 miles downstream of the study area (City of Seattle 2007; WDFW 2012a); at least 4 total barriers and 10 partial barriers to fish passage between the study area and the downstream reaches that support anadromous spawning
- McAleer Creek: Present up to 1,000 feet downstream of the study area, spawning habitat approximately 4,900 feet downstream (WDFW 2012b); partial fish passage barriers at I-5 (within the study area) and Forest Park Drive NE (immediately downstream of the study area)
- Scriber Creek: Present up to 3,000 feet downstream of the study area, spawning habitat in Swamp Creek, approximately 2.5 miles downstream (WDFW 2012a); total barrier to anadromous fish passage approximately 2,000 feet downstream of the study area

Based on the lack of suitable habitat and the presence of fish passage barriers downstream of the study area, Chinook salmon are not expected to use habitat in any streams in the study area.

Puget Sound Steelhead

The Puget Sound evolutionarily significant unit of steelhead trout is listed as threatened under the ESA, but has no listing status at the state level. Winter-run steelhead trout are present in Thornton and McAleer creeks, but they have not been observed in Scriber Creek. Compared to other salmonids, steelhead appear to have a greater ability to pass features and structures that are partial fish passage barriers. Therefore, steelhead have a greater likelihood than Chinook salmon of using stream habitat in the study area. The known distribution of Puget Sound steelhead in the project vicinity is as follows:

- Thornton Creek: Documented in the lower portions of the stream, below fish passage barriers (McMillan 2007 *in* City of Seattle 2007); the observation of an adult upstream of the culvert under I-5 indicates the potential for occurrence in the study area (Tetra Tech/KCM 2004a)
- McAleer Creek: Observed spawning immediately downstream of the study area, below a partial barrier to fish passage (Tetra Tech/KCM 2004b)
- Scriber Creek: Present in Swamp Creek (approximately 2.5 miles downstream of the study area) but not in Scriber Creek (Snohomish County 2002; WDFW 2012a); total barrier to anadromous fish passage approximately 2,000 feet downstream of the study area

Coastal-Puget Sound Bull Trout

The Coastal-Puget Sound distinct population segment of bull trout is listed as threatened under the ESA and is a State Candidate species. Bull trout have been observed entering Lake Washington in small numbers. None of the streams in the study area has been documented as supporting spawning or early rearing. Water temperatures in the study area streams are likely too high to support bull trout spawning or rearing. WDFW (1999) determined that successful spawning by bull trout occurs only upstream of the winter snow line (i.e., the elevation at which snow is present on the ground for much of the winter). Such areas are not found in the Thornton Creek, McAleer Creek, and Scriber Creek basins but may be present in other tributaries to Lake Washington.

River Lamprey

The river lamprey (*Lampetra ayresii*) has no listing status at the federal level but is a State Candidate species. Although there are no direct observations of river lamprey in the study area, their presence is likely. They are known to exist in tributaries to Lake Washington and Lake Sammamish, such as the Cedar River and Issaquah Creek.

3.1.4 Tribal Fishing

Judicial decisions have affirmed that federally recognized tribes have treaty rights which include, but are not limited to, the rights to harvest fish free of state interference (subject to conservation principles) and to co-manage the fishery resource. Lake Washington is among the usual and accustomed fishing areas of the federally recognized Muckleshoot Indian Tribe. Project impacts to Lake Washington's tributaries could affect the productivity of tribal fisheries, and thereby harm the fishing interests of the Muckleshoot and other tribes. Sound Transit is therefore addressing potential effects on fish and fish habitat in this report and coordinating with the Muckleshoot Indian Tribe Fisheries Division regarding these potential effects.

3.2 Vegetation, Terrestrial Wildlife, and Wildlife Habitat

The Lynnwood Link Extension would be constructed in an urban area where terrestrial habitats have already been subjected to a moderate to high degree of alteration. The degree of alteration varies from site to site, with the greatest alteration occurring where urban development is the greatest. Most of the study area is within or immediately adjacent to the I-5 corridor and, as such, has been substantially modified from pre-settlement conditions. Some areas of less-developed habitat remain, however, most notably near the Mountlake Terrace Transit Center and in the Scriber Creek wetland complex near the northern extreme of the study area.

3.2.1 Land Cover Types

Based on the structural categories defined by Johnson and O'Neil (2001) and on observations during field reconnaissance, six land cover types have been identified in the study area: Forest, Shrub, Maintained Vegetation, Residential Areas, Urban Areas, and Open Water. Table 3-2 provides brief descriptions of these cover types, with examples of where they occur in the study area. Figure 3-2a through Figure 3-2c show the mapped locations of the cover types within the study area.

More than 70 percent of the study area consists of the Urban and Residential Areas cover types, which cover approximately 476 acres combined (Table 3-2). Forest is the next most common cover type (13 percent of the study area), with 88 acres. Shrub and Maintained Vegetation cover roughly equivalent amounts of area, with 58 and 61 acres, respectively. Less than 0.5 acre of the study area consists of the Open Water cover type.

The area of Forest habitat east of I-5 near the Mountlake Terrace Transit Center has been identified by WDFW (2012b) as a priority habitat area based on the presence of high-quality habitat features. In addition, the study area includes a portion of Northacres Park in Seattle. Stands of coniferous and deciduous trees in that park have been identified as priority habitats, as have snags and downed logs (WDFW 2012b).

3.2.2 Terrestrial Wildlife Species

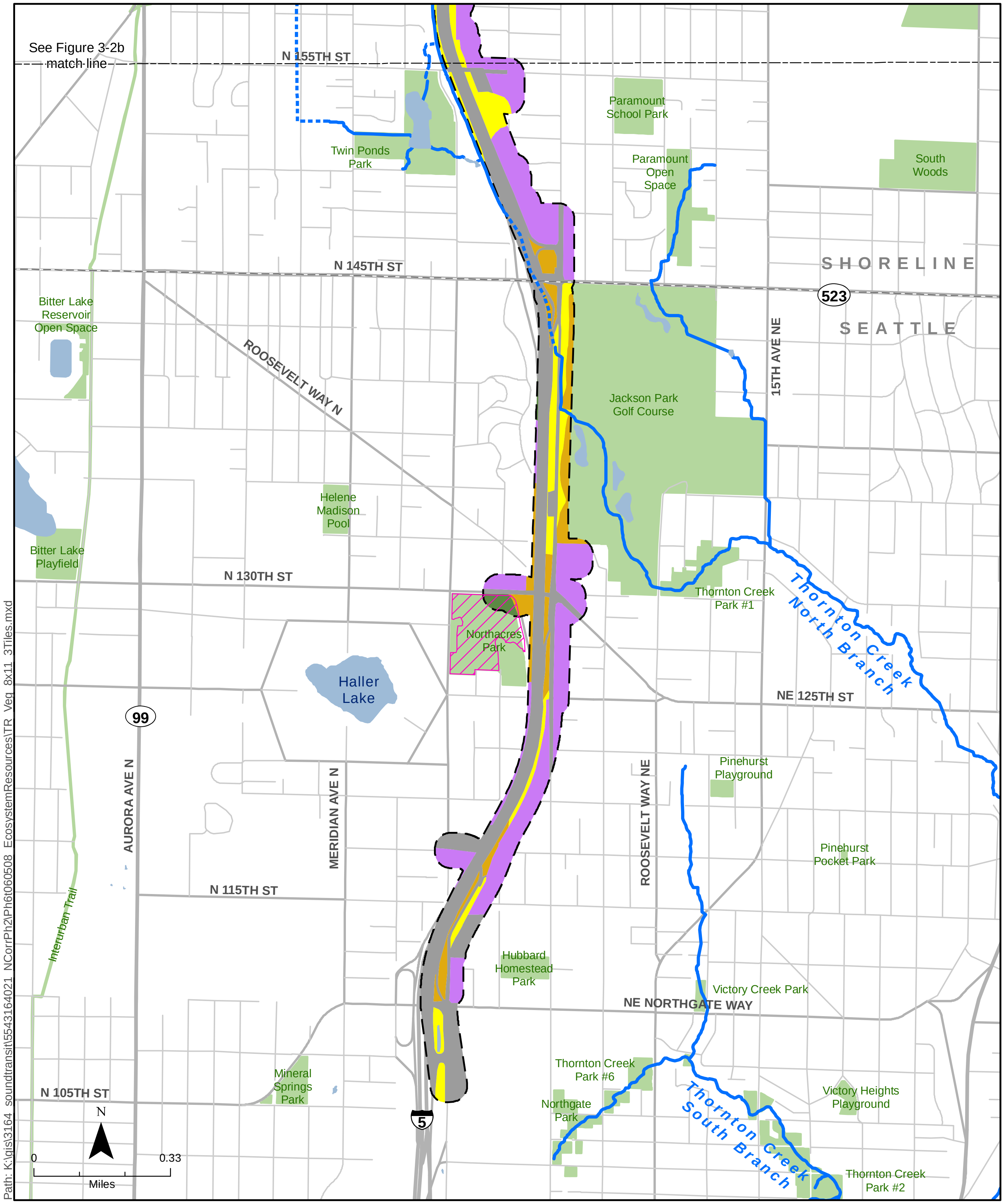
Wildlife use of habitats in urban landscapes depends on the general location of the habitat, the size and type of undisturbed habitats, the degree of connectivity and extent of travel corridors between and among these habitats, and the types and levels of human activity. Much of the Lynnwood Link Extension study area falls within commercial, industrial, and residential areas that provide habitat only for adaptable species such as sparrows, starlings, doves, rats, mice, raccoons, opossums, and squirrels. Birds such as common pigeons (*Columba livia*) and cliff swallows (*Petrochelidon pyrrhonota*) commonly build nests on bridges and road overpasses, and many bat species use such structures as temporary roosting sites.

Table 3-2. Land Cover Types in the Lynnwood Link Extension Study Area

Land Cover Type	Description	Examples of Occurrence	Acres in Study Area
Forest	Areas dominated by evergreen conifers, deciduous broadleaf trees, or a mixture of both, generally greater than 20 feet tall. Canopy cover variable but typically greater than 40 percent. Typical tree species include Douglas fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), madrone (*Arbutus menziesii*), red alder, black cottonwood, and bigleaf maple. Understories include shrubs, forbs, and/or grasses.	Northacres Park Veterans Memorial Park Scriber Creek wetland complex	88
Shrub	Areas dominated by native or non-native shrubs. May include trees (particularly red alder) singly or in patches. Common shrub species within the study area include salmonberry, salal (*Gaultheria shallon*), Himalayan blackberry, and snowberry (*Symphoricarpos albus*).	Slopes adjacent to I-5 Scriber Creek wetland complex	58
Maintained Vegetation	Typically, exotic grasses or annuals, such as mown grasses and other low vegetation, most of which are rarely allowed to go to seed. Includes stormwater detention areas.	I-5 median	61
Residential Areas	Houses and yards, including lawns, ornamental plantings, and pruned trees. Tree and shrub canopy cover generally less than 30 percent. Moderate to high levels of human disturbance. Snags, woody debris, and other natural structures are essentially non-existent.	South Lynnwood Pinehurst	170
Urban Areas	Roadways, parking lots, and other areas dominated by impervious surfaces. Little or no vegetation present.	I-5, parking lots, commercial developments	306
Open Water	Areas of ponding, including natural lakes, streams, and stormwater ponds. All open water in the study area is fresh water.	Ponds near Scriber Creek	<1

Larger habitat patches and those connected to other natural areas or heavily vegetated residential neighborhoods support a larger variety of species, such as songbirds, raptors, small mammals, coyotes, and black-tailed deer (*Odocoileus hemionus columbianus*). Songbird species commonly found in such areas include American robin (*Turdus migratorius*), song sparrow (*Melospiza melodia*), Steller's jay (*Cyanocitta stelleri*), American crow (*Corvus brachyrhynchos*), spotted towhee (*Pipilo maculates*), black-capped chickadee (*Poecile atricapillus*), white-crowned sparrow (*Zonotrichia leucophrys*), northern flicker (*Colaptes auratus*), Bewick's wren (*Thryomanes bewickii*), and red-breasted nuthatches (*Sitta canadensis*). Raptors include American kestrel (*Falco sparverius*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*A. cooperii*), red-tailed hawk (*Buteo jamaicensis*), and great horned owl (*Bubo virginianus*).

The largest area of native habitat in the study area is the Scriber Creek wetland complex. Waterfowl use areas of slow-moving water, and snags throughout the complex show evidence of recent excavation by woodpeckers. Vegetation and other features in the complex provide habitat for songbirds, small mammals, and amphibians. Mammals identified within the park included black-tailed deer, Eastern gray squirrel (*Scirurus carolinensis*), and river otter (*Lontra canadensis*). Evidence of beavers (*Castor canadensis*), including dams and lodges, has been observed nearby. The complex is surrounded on all sides, however, by residential and commercial developments, roads, and highways, limiting its value for wildlife species that require large, undisturbed areas and undeveloped travel corridors. The presence of invasive plant species, including Himalayan blackberry and reed canarygrass (*Phalaris arundinacea*), diminishes the value of habitats in the wetland complex.



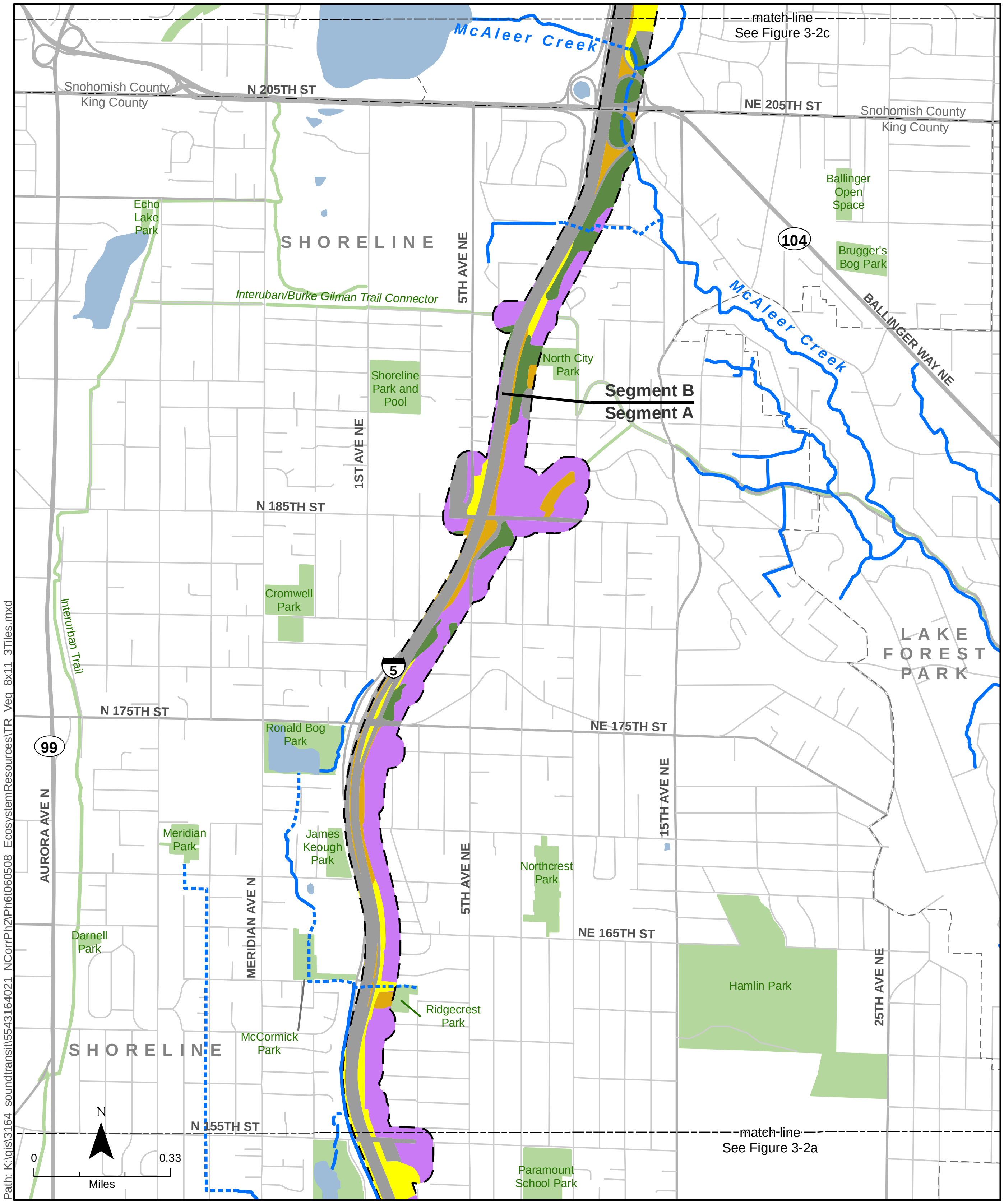
Data Sources: (King County, Snohomish County, WSDOT, Sound Transit, StreamNet)

Study Area
City Boundary
County Boundary
Park
Open Stream
Piped Stream
Waterbody
WDFW Priority Habitat Area

Land Cover Types in the Study Area
Forest
Shrub
Maintained Vegetation
Residential
Urban
Open Water

Figure 3-2a
Land Cover Types

Lynnwood Link Extension



Data Sources: (King County, Snohomish County, WSDOT, Sound Transit, StreamNet)

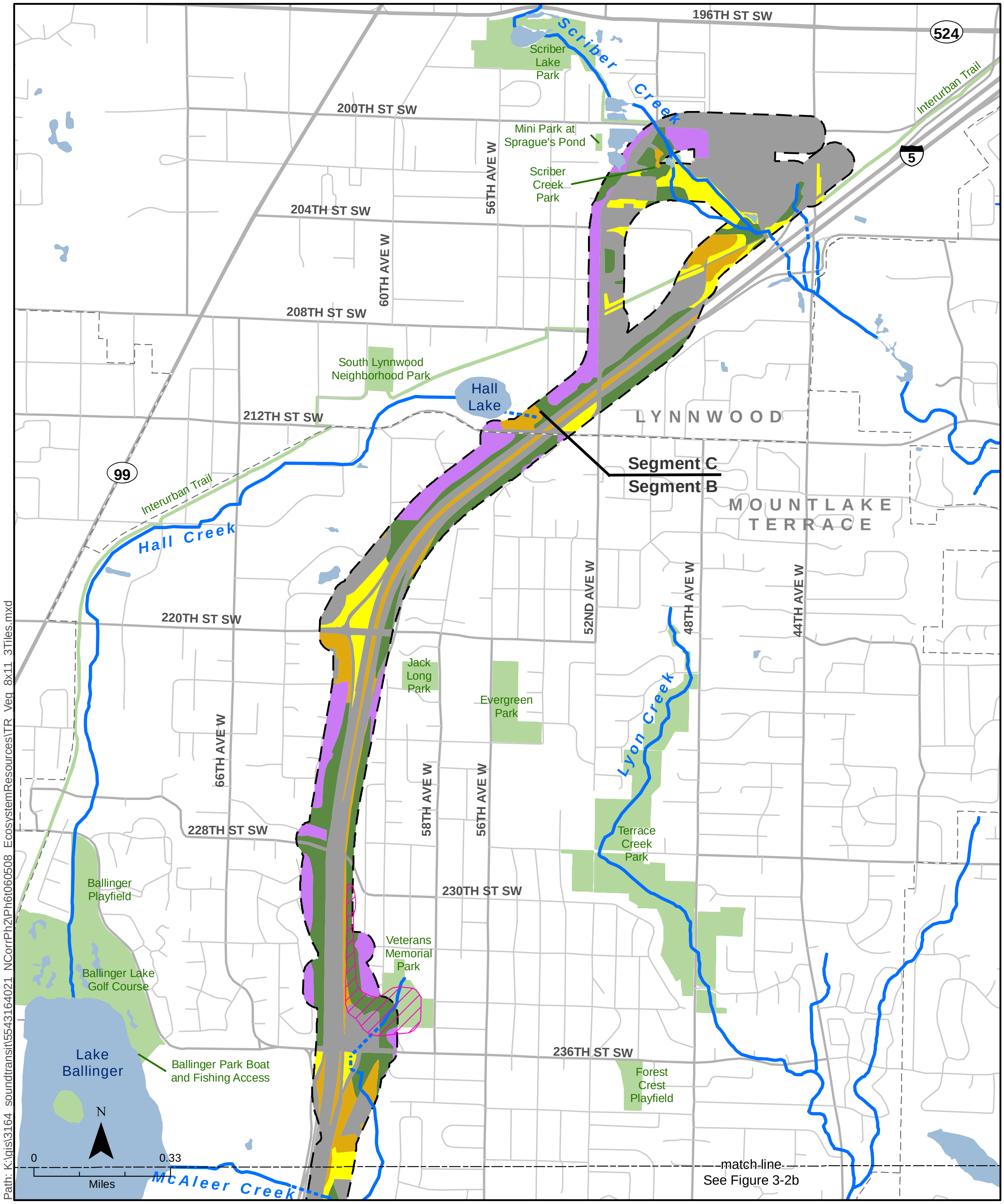
Study Area
City Boundary
County Boundary
Park
Open Stream
Piped Stream
Waterbody
WDFW Priority Habitat Area

Land Cover Types in the Study Area

Forest
Shrub
Maintained Vegetation
Residential
Urban
Open Water

Figure 3-2b
Land Cover Types

Lynnwood Link Extension



Data Sources: (King County, Snohomish County, WSDOT, Sound Transit, StreamNet)

- Study Area
- City Boundary
- County Boundary
- Park
- Open Stream
- Piped Stream
- Waterbody
- WDFW Priority Habitat Area

Land Cover Types in the Study Area

- Forest
- Shrub
- Maintained Vegetation
- Residential
- Urban
- Open Water

Figure 3-2c
Land Cover Types

Lynnwood Link Extension

Most patches of forest cover in the study area are fragmented and separated from surrounding habitat areas by commercial, urban, and residential developments and roads. Despite their isolation, these areas still provide habitat for forest-associated resident and migratory songbirds, as well as for hawks, owls, woodpeckers, and small mammals.

Based on breeding bird survey reports (Opperman et al. 2006), 26 bird species are known or expected to nest in the 9-square-mile survey block located near the southern terminus of the project (Northgate). Based on data from the Audubon Society (2011), additional species commonly seen in the area outside of the breeding season include American wigeon (*Anas americana*), northern pintail (*Anas acuta*), bufflehead (*Bucephala albeola*), western grebe (*Aechmophorus occidentalis*), and glaucous-winged gull (*Larus glaucescens*).

Rivers and streams are used as travel corridors by many wildlife species, including semi-aquatic species such as muskrat, mink, otter, frogs, stream salamanders, turtles, and snakes (Jackson 2003). Despite the widespread urbanization of the I-5 corridor, riparian areas along the streams may serve as a connective corridor between pockets of wildlife habitat.

3.2.3 Threatened, Endangered, and Candidate Species

Based on reviews of Natural Heritage Program data from DNR and PHS data from WDFW, no ESA-listed or state-listed threatened or endangered plant or wildlife species are known or expected to occur in the study area. The USFWS (2012) identified several ESA-listed wildlife species that may occur in King County or Snohomish County, and four candidates for listing. Based on their habitat requirements and known distribution, none of these species (Canada lynx [*Lynx canadensis*], gray wolf [*Canis lupus*], grizzly bear [*Ursus arctos horribilis*], Pacific fisher [*Martes pennanti pacifica*], North American wolverine [*Gulo gulo carcajou*], marbled murrelet [*Brachyramphus marmoratus*], northern spotted owl [*Strix occidentalis caurina*], yellow-billed cuckoo [*Coccycus americanus*], and Oregon spotted frog [*Rana pretiosa*]) is expected to use habitats in the study area. These species will not be addressed further in this document.

Several species that are state-listed as sensitive species, or that are candidates for state listing, are known or likely to be present in the study (Table 3-3). For this analysis, these species are referred to as species of concern. Site-specific distribution data are available for only a few of these species, and no species-specific surveys or habitat assessments were conducted for this project. The known or expected occurrence of these species in the study area is based on observations and the presence of potentially suitable habitat (Table 3-3).

The Migratory Bird Treaty Act, administered by USFWS, makes it unlawful to take, import, export, possess, sell, purchase, or barter any migratory bird, with the exception of the taking of game birds during established hunting seasons. The law also applies to feathers, eggs, nests, and products made from migratory birds. Nearly all bird species that may occur in the study area are protected under the Migratory Bird Treaty Act. All habitats in the study area support migratory birds of some type at some time in their life cycle; therefore, all habitats identified above would be considered habitat for migratory birds.

Table 3-3. Species of Concern That May Occur in the Lynnwood Link Extension Study Area

Common Name	Scientific Name	Federal Status [a]	State Status [b]	Expected Occurrence in Study Area: Likely Present	Expected Occurrence in Study Area: Possibly Present	Preferred Habitat
Townsend's Big-eared Bat	*Corynorhinus townsendii*	FCo	SC		X	Forages over and near forested habitat; bridge abutments occasionally used by individual male bats as day roosts.
Western Toad	*Anaxyrus boreas*	FCo	SC	X		Breeds and develops in wetland habitats. Adult toads regularly use forested upland habitat.
Bald Eagle	*Haliaeetus leucocephalus*	FCo	SS		X	Nests in wooded areas with larger trees within 0.5 mile of large bodies of water. May forage near the study area.
Peregrine Falcon	*Falco peregrinus*	FCo	SS		X	Typically nests in cliffs that are at least 150 feet high; may also use buildings and bridges. Open habitats, including wetland areas, provide foraging habitat.
Pileated Woodpecker	*Dryocopus pileatus*	None	SC	X		Mature and old-growth forests, second-growth forests with large snags and fallen trees. Evidence of recent excavations observed in Nile Temple Golf Course, near study area.
Vaux's Swift	*Chaetura vauxi*	None	SC		X	Breeds in mountains and foothills. Forages over wooded areas and open habitats, including towns.

[a] FCo = Federal species of concern

[b] SC = State Candidate; SS = State Sensitive species

3.3 Wetlands

Sound Transit identified 35 wetlands in the study area. No formal wetland delineations occurred during the field reconnaissance for this analysis. Such delineations would occur during the Final EIS and/or the permitting phase of this project. Of these, 24 were identified during field surveys within the field reconnaissance survey area (Table 3-4) and 11 were identified outside of the field reconnaissance survey area via existing documentation and public vantage points (Table 3-5). Detailed wetland descriptions, wetland determination data forms, wetland rating forms, and photographs are provided in the Wetland Identification and Survey Report (Appendix B).
Figure 3-1 in Appendix B presents an overview of mapped locations of field-identified and potential wetlands within the study area. Potential wetlands include portions of field-identified wetlands that extend beyond the field reconnaissance survey area, as well as areas that appear to meet the wetland criteria that fall entirely outside of this survey area, but could not be ground-truthed. Appendix D presents detailed locations of individual wetlands and buffers. One of the field-identified wetlands is a constructed stormwater feature that was historically a wetland (Wetland WSE2), and one wetland (Wetland WSH1) contains a ditched swale. Of the field-identified wetlands, one is rated as Category II according to the Ecology rating system, 18 are rated as Category III, and 5 are rated as Category IV. The majority of wetlands are smaller than 0.5 acre, except Wetlands WSE8 (approximately 0.63 acre), WMT6 (1.24 acres), and WLY4 (approximately 17.00 acres). All wetlands in the study area are in areas characterized by urban and residential land use where the natural environment has been altered.

Table 3-4. Summary of Field-Identified Wetlands within the Lynnwood Link Extension Study Area

Wetland[a]	Size (acres)	USFWS Class[b]	HGM Class[c]	Ecology Rating[d]	Local Rating[e]	Buffer Width[f] (feet)
WSE1	0.44	PFO	Riv	III	III	60
WSE2	0.42	PSS,PAB	Dep	IV	IV	50
WSE3	0.21	PFO,PEM	Dep,Slope	III	III	60
WSE4	0.09	PFO	Dep	III	III	60
WSE5	0.16	PFO	Dep	III	III	60
WSE6	0.06	PSS	Dep	III	III	60
WSE7	0.14	PSS,PEM	Dep	III	III	60
WSE8	0.63	PFO,PSS	Dep	III	III	60
WSH1	0.06	PFO,PSS,PEM	Dep,Slope	III	III	65
WSH2	0.09	PEM	Dep,Slope	IV	IV	35
WSH3	0.03	PEM	Slope	IV	IV	35
WSH4	0.11	PFO,PEM	Dep,Slope	III	III	65
WSH5	0.37	PFO	Dep	III	III	65
WMT1	0.29	PFO	Dep	III	III	65
WMT2	0.17	PFO	Riv,Slope	III	III	65
WMT3	0.01	PFO	Dep	III	III	65
WMT4	0.43	PFO,PSS	Dep,Slope	III	III	65
WMT5	0.36	PFO,PEM	Dep	III	III	65
WMT6	1.24	PFO	Dep	III	III	65
WMT7	0.41	PFO	Dep	IV	IV	50
WMT8	0.01	PFO	Slope	IV	IV	50
WLY3	0.08	PSS	Dep	III	III	75
WLY4	17.00	PFO,PSS,PEM	Riv,Dep	II	II	110
WLY6	0.05	PFO	Dep	III	III	75

[a] Wetlands are identified with alphanumeric codes: WYYn. W stands for wetland; YY = two-letter code for local jurisdiction (SE = Seattle, SH = Shoreline, MT = Mountlake Terrace, LY = Lynnwood); n = sequential identification number.

[b] Cowardin et al. (1979). USFWS = U.S. Fish and Wildlife Service. PAB = palustrine aquatic bed; PEM = palustrine emergent; PFO = palustrine forested; PSS = palustrine scrub-shrub

[c] Brinson (1993). HGM = Hydrogeomorphic; Dep = Depressional; Riv = Riverine; Slope = Slope

[d] Hruby (2004)

[e] Seattle Municipal Code 25.09.160.A , only applicable to development on publicly or privately owned parcels (Wetlands WSE1-WSE8), Shoreline Municipal Code 20.80.320 (Wetlands WSH1-WSH5), Mountlake Terrace Municipal Code 16.15.080 (Wetlands WMT1-WMT8), Lynnwood Municipal Code 17.10.050 (WLY3, WLY4, and WLY6)

[f] Seattle Municipal Code 25.09.160.C, only applicable to development on publicly or privately owned parcels (Wetlands WSE1-WSE8), Shoreline Municipal Code 20.80.330 (Wetlands WSH1-WSH5), Mountlake Terrace Municipal Code 16.15.090 (Wetlands WMT1-WMT8), Lynnwood Municipal Code 17.10.051 (WLY3, WLY4, and WLY6)

Table 3-5. Summary of Potential Wetlands within the Lynnwood Link Extension Study Area

Wetland[a]	Size (acres)	USFWS Class[b]	HGM Class[c]	Ecology Rating[d]	Local Rating[e]	Buffer Width[f] (feet)
PWSH1	0.05	PEM	Slope	unknown	III	65
PWSH3	0.10	PFO,PEM	unknown	unknown	III	65
PWSH4	0.19	PFO	Slope	unknown	III	65
PWSH5	0.07	PEM	Slope	unknown	III	65
PWMT1	0.02	PEM	Slope	III	III	65
PWMT2	0.02	PFO	Dep	III	III	65
PWLY1	0.07	PSS	Dep	III	III	75
PWLY2	0.26	PFO	Dep	III	III	75
PWLY3	0.07	PEM	Dep	III	III	75
PWLY4	0.03	PFO	Dep	III	III	75
PWLY5	0.03	PUB	Dep	III	III	75

[a] Potential wetlands are identified with alphanumeric codes: PWYYn. PW stands for potential wetland; YY = two-letter code for local jurisdiction (SE = Seattle, SH = Shoreline, MT = Mountlake Terrace, LY = Lynnwood); n = sequential identification number.

[b] Cowardin et al. (1979). USFWS = U.S. Fish and Wildlife Service. PEM = palustrine emergent; PFO = palustrine forested; PSS = palustrine scrub-shrub; PUB = palustrine unconsolidated bottom

[c] Brinson (1993). HGM = Hydrogeomorphic; Dep = Depressional; Riv = Riverine; Slope = Slope

[d] Hruby (2004)

[e] Shoreline Municipal Code 20.80.320 (Wetlands PWSH1-PWSH5), Mountlake Terrace Municipal Code 16.15.080 (Wetlands PWMT1-PWMT2), Lynnwood Municipal Code 17.10.050 (PWLY1-PWLY5)

[f] Shoreline Municipal Code 20.80.330 (Wetlands PWSH1-PWSH5), Mountlake Terrace Municipal Code 16.15.090 (Wetlands PWMT1-PWMT2), Lynnwood Municipal Code 17.10.051 (PWLY1-PWLY5)

3.3.1 Hydrology

Signs of altered hydrology were evident in most wetlands, due to the urbanization and development throughout the study area. Historically, wetlands have been altered in several ways, such as filling, ditching, bisecting, and clearing. Human alterations, such as excavation and stormwater runoff, have also created or enlarged wetlands. Many study area wetlands are within maintained rights-of-way where they receive stormwater runoff from pipes, ditches, or overland flow. Other sources of hydrology include a shallow groundwater table, precipitation, and overbank flow from adjacent streams.

3.3.2 Soils

Soil survey data from the NRCS Web site are not available for the portions of the study area within King County (cities of Seattle and Shoreline). Because of urbanization and development, most of the study area in Snohomish County (cities of Mountlake Terrace and Lynnwood) is mapped as Urban land.

3.3.3 Vegetation

Most wetlands in the study area contain forested, scrub-shrub, or emergent habitat (see USFWS classes for each wetland in Tables 3-5 and 3-6). One wetland (Wetland WSE2) also has aquatic bed habitat and another (Wetland PWLY5) lacks vegetation (i.e., unconsolidated bottom). Vegetation in the study area wetlands is a mix of native and non-native species, many of which are disturbance-tolerant. Surrounding buffers range from forested to herbaceous cover; disturbance-tolerant species are common.

3.3.4 Jurisdictional Determination

Sound Transit will request jurisdictional determinations of those wetlands that are likely to be affected along the preferred alternative during the permitting phase of this project.

4 ENVIRONMENTAL CONSEQUENCES

This chapter describes the potential impacts of the Lynnwood Link Extension on aquatic species and habitat; vegetation, terrestrial wildlife, and wildlife habitat; and wetlands. The discussion of project impacts assumes that the BMPs described in Appendix A would be implemented and performed as expected to avoid and minimize certain impacts during construction.

During the Final EIS process, Sound Transit will review the project to ensure ESA compliance[3]. That assessment will also include a review of potential effects on essential fish habitat, as required by the Magnuson-Stevens Fishery Conservation and Management Act. Sound Transit expects that the Lynnwood Link Extension would result in no adverse effects on essential fish habitat.

4.1 Aquatic Species and Habitat

Construction of the Lynnwood Link Extension could affect aquatic species and habitat in the study area. Analyses in this subsection address the potential long-term, construction-related, and indirect impacts of each alternative. These impacts are defined as follows:

- Long-term impacts include permanent loss or degradation of instream or riparian habitat, altered hydrology, degradation of water quality, or changes in habitat connectivity (e.g., fish passage).
- Construction-related impacts include temporary loss or degradation of instream or riparian habitat (including hydrology or water quality), or disturbance from in-water work.
- Indirect and secondary impacts include those related to residential and commercial development near stations, or impacts on other resources from mitigation measures.

Analyses in this subsection focus on salmonid fish species and their habitat because salmonids include the species of greatest concern in Pacific Northwest freshwater environments. Because the habitat requirements and mode of potential impacts are so similar for the salmonid species present, the analysis is combined for all salmonid species; however, species-specific impacts are identified where appropriate. All federally listed threatened and endangered aquatic species that may occur in the study area are all salmonids and are, therefore, addressed in the combined analysis. The discussion herein is thus limited to the potential for project impacts on all species based on the proximity of their known habitat in the project vicinity. Impacts on essential fish habitat are similarly included in the generic analysis and are not discussed separately.

Discussions of long-term and construction-related impacts include assessing the range of impacts that could occur for each project segment and alternative. Actual impacts would depend on final alternative selection and design, construction footprint and methods, BMPs implemented during

[3] Section 7(a)(2) of the ESA stipulates that federal agencies must consult with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service to ensure any action authorized, funded, or carried out by a federal agency (in this case, the Federal Transit Administration, which is providing funding for the Lynnwood Link Extension) is not likely to jeopardize the continued existence of any endangered or threatened species or result in the adverse modification or destruction of designated critical habitat.

construction, and performance of post-construction restoration, including revegetation of disturbed areas and mitigation for impacts on areas protected under local Critical Areas Ordinances.

4.1.1 Long-Term Impacts

Direct long-term impacts could occur where the project limits cross streams or stream buffers. The project limits include the guideway, station footprints (including parking), roadway improvements, storm drainage ponds, and other ancillary features. In addition, a 15-foot clear zone would be maintained on either side of the guideway to prevent damage to catenary wires from falling vegetation. Existing trees in this zone would be cleared and no trees would be planted. For the Draft EIS, all impacts within these areas are considered long-term (see explanation in Section 1.4, Assumptions). Sound Transit will re-evaluate this assumption and identify temporary construction limits during the Final EIS and/or the permitting phase.

Under any of the light rail alternatives, construction and operation of guideways, stations, and ancillary features would not be expected to have any direct effects on instream habitat. As explained in Section 1.4, Assumptions, nearly all construction is anticipated to occur outside of the OHWM of all streams and the guideways would be elevated at all open stream crossings. A possible exception to this expectation could occur in the Scriber Creek wetland complex, where the stream lacks a defined channel and it is not possible to determine the exact location of the OHWM. Construction of elevated guideways could entail the installation of support columns within the wetland area, which could include areas below the OHWM for Scriber Creek. The actual location of any such structures would not be known until later in the project design process, and their location relative to the OHWM for Scriber Creek would be determined through the local permitting process. In addition to potential direct impacts on the stream, impacts to the wetland complex could adversely affect juvenile salmonids that rear and overwinter in wetland habitats adjacent to Scriber Creek. None of the other wetlands identified in the study area is accessible to juvenile fish. The potential for such construction to adversely affect aquatic species or habitats would be avoided or minimized through the implementation of conservation measures necessary for permit compliance.

The presence of elevated guideways over stream habitat could have a beneficial effect, creating shade that helps keep water temperatures low. Operation of the light rail system would not be expected to result in any increases in nighttime illumination of fish-bearing waters (which could increase the risk of predation on juvenile salmonids) because the tracks would have no overhead lighting and the train headlights would be directed parallel to the tracks. No impacts on fish passage are anticipated because no new culverts would be added in streams with documented or potential fish habitat and no existing culverts in such streams would be extended. Construction of at-grade or elevated guideways, stations, and ancillary features above streams in culverts (e.g., Stream SSH3, a tributary to Thornton Creek in Shoreline) would not be expected to affect stream habitat. The potential for the construction of guideways, stations, and other facilities to interfere with possible future fish habitat restoration projects is addressed in Section 4.4, Indirect and Secondary Impacts.

No construction of at-grade guideways, stations, or ancillary features would occur within the regulatory buffers of any surface-flowing streams in the study area. This would not necessarily preclude all potential adverse effects on stream habitat, however. The loss of forest habitat at considerable distances from streams—even up to 200 feet—can reduce the amount of wood available for recruitment to those streams (Knutson and Naef 1997). Notably, studies conducted in western Washington, western Oregon, and southeast Alaska indicate that more than 90 percent of large woody debris input to streams from riparian areas is recruited from the areas within one-half of a site potential tree height[4] (Murphy and Koski 1989; McDade et al. 1990; McKinley 1997; Martin et al. 1998). Based on an estimated site potential tree height of 200 feet, most potential recruitment of large woody debris to study area streams would be expected to come from the areas within regulatory buffers, and nearly all recruitment would come from within 100 feet. Construction of at-grade facilities outside of regulatory buffers, therefore, would likely result in minimal reductions in wood recruitment to study area streams.

Permanent impacts on riparian habitat may also occur where elevated guideways span areas of riparian vegetation. Construction of elevated guideways above vegetation would reduce the amount of water the vegetation receives from precipitation. In addition, guideways with low clearance (generally, less than 15 feet) may limit sunlight. In some areas, vegetation cleared from beneath elevated guideways may not grow back. The presence of elevated guideways would preclude the development of mature forest habitat in such areas, reducing the potential for the recruitment of large woody debris to nearby streams. Because the elevated guideway structures would be relatively narrow (31 feet wide) and generally more than 15 feet above the ground surface, shading impacts on riparian vegetation would be limited in most areas, although some impacts would result from shading and water interception. As learned from the Sound Transit Central Link project, herbaceous plants and shrubs are generally able to grow beneath narrow guideways that are at least 15 feet above the ground (Sound Transit 2011). Based on the nature and location of buffer impacts, as well as the current condition of the buffers themselves, no substantial degradation of riparian functions (e.g., fish and wildlife habitat, food chain support, or water temperature maintenance) or processes would likely result from project-related clearing under any of the alternatives. The riparian processes that would likely not be affected include water flow; erosion and accretion; infiltration; groundwater recharge and discharge; sediment delivery, transport, and storage; organic matter input; nutrient and pathogen removal; and stream channel formation and maintenance.

Long-term impacts could be caused by increases in the amount of impervious surface in the study area, which can increase stormwater runoff rates, volumes, and pollutant loads. These, in turn, can lead to higher peak flows and degrade water quality in streams. New impervious areas would include new tracks and guideways, stations, park-and-ride lots, and roads. In general, elevated segments would result in less new impervious area than at-grade segments because the pervious ground would

[4] Site potential tree height is the average maximum height of the tallest dominant trees (200 years or older) at a given location, based on the soil and climatic conditions at that site. Site potential tree heights of 200 feet are not uncommon in the Puget Sound lowlands.

be retained underneath elevated segments in most areas. Project features that do not receive motor vehicle traffic, such as guideways (both elevated and at-grade) and stations, would not be pollution-generating impervious surfaces (PGIS). Project-related parking lots (including new park-and-ride facilities) and road realignments would receive motor vehicle traffic and would, therefore, be PGIS.

To minimize the potential impacts of increased impervious surface, stormwater detention facilities would be constructed as part of the project. The amount of area detained would be sufficient to offset any increase in impervious surface area under any of the alternatives. Based on the implementation of these BMPs, peak flows would not be expected to increase in any of the streams in the study area as a result of the project; moreover, base flows would be expected to remain similar to current conditions. Stormwater from all project-related impervious surface would receive appropriate flow control where required. In addition, PGIS associated with the project would receive water quality treatment where applicable.

In some areas, especially in Segment C, existing pollution-generating segments of I-5 and commercial parking areas would be spanned by elevated portions of light rail. In these areas, precipitation that might otherwise have fallen on pollution-generating surfaces would fall instead on the non-pollution-generating surface of the elevated guideway. The result would, in effect, be a conversion from pollution-generating to non-pollution-generating impervious surface, potentially reducing the overall amount of PGIS in the study area. Based on the water resources impact analysis, none of the alternatives would degrade water quality compared to existing conditions. In addition, the light rail system could reduce future increases in traffic volume in the study area, which would indicate the likelihood of lower levels of pollutant increases associated with motor vehicle traffic.

The light rail alternatives would be designed to comply with guidance equivalent to Ecology's *Stormwater Management Manual for Western Washington* (Ecology 2012). Sound Transit's preliminary engineering for the Lynnwood Link Extension includes development of a conceptual layout for major stormwater facilities that are sized to comply with Sound Transit's *Design Criteria Manual* (Sound Transit 2012), which requires stormwater facilities for its projects to conform to the requirements of local jurisdictions. These facilities include stormwater ponds and underground vaults. Additional measures to reduce stormwater runoff, such as low-impact development or other on-site measures, would be considered at a more advanced phase of project development. Given Sound Transit's commitment to design the project to meet the stormwater management requirements of each jurisdiction, the light rail alternatives are not expected to adversely affect surface waters.

Peak stream flows in the study area would not be expected to increase substantially under any of the alternatives because the stormwater systems built for the project would be designed to simulate pre-development hydrology. As stated in the *Stormwater Management Manual for Western Washington,* "The Manual is intended to provide project proponents, regulatory agencies and others with technically sound stormwater management practices which are presumed to protect water quality and instream habitat – and meet the stated environmental objectives of the regulations described in this chapter." It is possible, however, that discharges from detention facilities could result in increased water velocities and durations in receiving waters, potentially reducing the availability of forage displacing juvenile salmonids from cover (Tschaplinski and Hartman 1983).

In addition, impervious surfaces preclude natural infiltration of precipitation into the ground, decreasing groundwater recharge. Less precipitation entering groundwater aquifers might decrease dry-season base flows by decreasing water inputs to streams from groundwater sources such as springs. Dry-season base flows have been identified as one of the most important natural limiting factors controlling salmonid production in lowland Puget Sound streams.

Where low-impact development measures are implemented, some stormwater runoff from project-related impervious surfaces would be collected and infiltrated into the ground. In some areas, this could result in increased groundwater recharge compared to existing conditions (under which stormwater runoff is managed mainly through vaults and ponds that do not infiltrate). However, some soil types in the project area are not conducive to infiltration of precipitation into the ground.

It is assumed for this analysis that the risk of adverse effects on peak and base flows would correspond with the amount of proposed new impervious surface. The less impervious surface in an alternative, the lower the potential for adverse effects in a given basin. Alternatives with longer elevated guideways or more elevated stations would likely have less impact on base flows compared to alternatives with more at-grade guideway and/or road widening. Even the alternative with the highest increase in impervious surface would only have a minor impact at a basin-wide level because the light rail alternatives would affect a small proportion of the basin relative to the existing impervious surfaces within the basin.

No Build Alternative

The No Build Alternative would not have any direct long-term impacts on aquatic species or habitat. Conversely, implementing the No Build Alternative would not have potential beneficial environmental effects over the long term, such as reducing increases in motor vehicle traffic in the region, facilitating the concentration of residential and commercial growth in planned growth centers, or implementing compensatory mitigation for impacts on wetlands, streams, and their required buffers.

Segment A: Seattle to Shoreline

Table 4-1 summarizes the amount of stream (in linear feet of open [i.e., not piped] stream channel) and stream buffer area (in acres, based on the width of the regulatory stream buffer in the local jurisdiction) that would be affected by each alternative in each segment. All six alternatives for Segment A would cross Thornton Creek at the same location and would, therefore, affect equal amounts of Thornton Creek and its regulatory buffer[5]. Similarly, all six alternatives would cross the piped tributary near Ridgecrest Park (Stream SSH3) at the same location, affecting equal amounts of the regulatory buffer for that watercourse.

[5] The segment of Thornton Creek that would be affected is in the city of Seattle within the road right-of-way (not on a publicly or privately owned parcel) and may not be subject to the City of Seattle Critical Areas Ordinance (Seattle Municipal Code 25.09).

Table 4-1. Long-Term Impacts on Streams and Buffers by Project Alternative

Segment/Alternative	Stream Channel Affected (linear feet)	Stream Buffer Area Affected[a] (acres)
Segment A: Seattle to Shoreline		
A1: At-grade/Elevated with NE 145th and NE 185th Street Stations	All Alternatives: Thornton Creek (102)	All Alternatives: SSH3 (<0.1) Thornton Creek (0.6)[b]
A3: Mostly Elevated with NE 145th and NE 185th Street Stations		
A5: At-grade/Elevated with NE 130th, NE 155th, and NE 185th Street Stations		
A7: Mostly Elevated with NE 130th, NE 155th, and NE 185th Street Stations		
A10: At-grade/Elevated with NE 130th, NE 145th, and NE 185th Street Stations		
A11: Mostly Elevated with NE 130th, NE 145th, and NE 185th Street Stations		
Segment B: Shoreline to Mountlake Terrace		
B1: East Side to Mountlake Terrace Transit Center to Median	SMT1 (202)	McAleer Creek (0.6) SMT1 (0.6) SSH2 (<0.1)
B2: East Side to Mountlake Terrace Transit Center to West Side	SMT1 (202)	McAleer Creek (0.6) SMT1 (0.6) SSH2 (<0.1)
B2A: East Side to Mountlake Terrace Transit Center to West Side with Optional 220th Street SW Station	SMT1 (202)	McAleer Creek (0.6) SMT1 (0.6) SSH2 (<0.1)
B4: East Side to Mountlake Terrace Freeway Station to Median	McAleer Creek (39)	McAleer Creek (1.0) SSH2 (<0.1)
Segment C: Mountlake Terrace to Lynnwood		
C1: 52nd Avenue West to 200th Street SW	Scriber Creek (55)	Scriber Creek (0.3)
C2: 52nd Avenue West to Lynnwood Transit Center	Scriber Creek (143) SLY1 (58)	Scriber Creek (Not applicable)[c] SLY1 (0.1)
C3: Along I-5 to Lynnwood Park-and-Ride	Scriber Creek (130) SLY1 (81)	Scriber Creek (Not applicable)[c] SLY1 (0.1)

[a] Values presented in this table represent all affected areas inside the regulatory stream buffers within each local jurisdiction, including areas that overlap with wetlands or wetland buffers. Note that all values are preliminary estimates and most impacts would likely be temporary; see discussion in Section 1.4, Assumptions.

[b] Buffer impacts are not on publicly or privately owned parcels and may not be subject to the City of Seattle Critical Areas Ordinance (Seattle Municipal Code 25.09).

[c] The portions of Scriber Creek that would be crossed by Alternatives C2 and C3 are within the wetland complex and have no defined channel. As such, no buffers could be applied to these streams for GIS analysis. Stream buffer impacts are described qualitatively in the accompanying text.

Segment B: Shoreline to Mountlake Terrace

Alternatives B1, B2, and B2A would all cross a piped portion of the main stem of McAleer Creek at the same location immediately east of I-5. All three alternatives would pass through regulatory buffers surrounding open segments of the stream in the cities of Mountlake Terrace and Shoreline, affecting equal amounts of those buffer areas (Table 4-1).

Alternative B4 would cross an open segment of McAleer Creek where it exits the culvert under I-5, spanning approximately 39 linear feet of the stream (Table 4-1). Also, because it would pass closer to the stream, this alternative would affect more of the stream buffer than Alternatives B1, B2, and B2A.

Alternatives B1, B2, and B2A would cross the northern tributary to McAleer Creek (Stream SMT1) at or near the same location and would affect approximately equal amounts of the stream and its regulatory buffer. In addition, project-related work in the parking lot for the Mountlake Terrace Transit Center under those three alternatives would cross a piped segment of Stream SMT1 and would affect the regulatory buffer of an open-channel segment upstream of the facility. All three alternatives would affect equal areas of that buffer.

Alternative B4 would enter the I-5 median south of the Mountlake Terrace Park-and-Ride facility and would not affect Stream SMT1 or any of its buffer areas.

All alternatives for Segment B would cross a piped segment of the southern tributary to McAleer Creek (Stream SSH2) at the same location and would, therefore, affect equal amounts of its regulatory buffer (Table 4-1).

Segment C: Mountlake Terrace to Lynnwood

Each of the Segment C alternatives includes one option that begins in the I-5 median before crossing north to the west side of the freeway near 52nd Avenue West (Option 1) and another option that begins on the west side of the freeway (Option 2). Neither of these options would cross streams or pass through stream buffers, so comparisons of the alternatives do not distinguish between the options.

Each alternative would cross Scriber Creek at a different location, with the elevated guideway passing over slightly different lengths of the stream and affecting slightly different areas of stream buffer (Table 4-1). By crossing the stream near the northern end of the Scriber Creek wetland complex, Alternative C1 would affect less of the stream buffer, as well as the associated wetlands and wetland buffers, compared to the other alternatives. Alternative C3, which would cross near the southern end of the wetland complex, would affect slightly more wetland area than Alternative C1. Alternative C2, which would cross the center of the wetland complex, would affect the greatest amount of stream and wetland buffer area. Although the amount of area affected would differ, the overall effects (described under Long-term Impacts, above) would be essentially the same.

Under Alternative C2, the tail track of the elevated guideway would extend over a portion of the northern tributary to Scriber Creek (Stream SLY1), crossing both the stream and its regulatory buffer. The Alternative C3 tail track would cross the same stream in a slightly different location and at an oblique angle, thereby affecting slightly more buffer area (Table 4-1). Alternative C1 would not cross Stream SLY1.

4.1.2 Construction Impacts

Similar to long-term impacts, construction-related impacts would occur where the project limits cross streams or stream buffers. Construction impacts would be temporary, however, and would be limited to the period during and immediately following project construction.

All construction of guideways, stations, and ancillary features under any of the alternatives (with the possible exception of some supporting columns for the elevated guideway through the Scriber Creek wetland complex) are anticipated to occur above the OHWM of any streams in the study area. As such, project construction would not cause disturbance of instream habitat.

The use of artificial lighting in association with nighttime construction could affect fish in study area streams. Research suggests that changes in ambient light may alter migratory behavior or affect predation rates on juvenile salmonids (Tabor et al. 2004).

Any earthwork conducted within a basin has the potential to cause sedimentation that would adversely affect the streams in the basin downstream of the work activity. The most obvious situation in which sedimentation could occur is where earthwork construction occurs in or next to a stream channel. However, any earthwork in a basin might contribute to the already serious sedimentation problems that exist in the streams in the project vicinity. This is because most stormwater in urban settings is collected in a system of pipes or ditches and conveyed directly to the nearest stream. An exception to this practice is in newer developments, where stormwater detention facilities trap much of the sediment carried by upstream sources before discharging into streams. But even in these developments, some of the finer sediments might be discharged to streams as the ponds fill with stormwater and overflow.

The types of adverse impacts from excessive sediment in streams are well documented, and salmonid ecosystems experience a wide range of adverse impacts. For example, excessive sediment might preclude salmonid spawning or successful egg incubation, or it might lower egg survival. The production and diversity of benthic invertebrates—the primary food source of juvenile salmon and resident trout—are reduced as sediment loading increases. Shelter for juvenile salmonids is decreased as the voids between rocks are filled with sediment. Pools may also become full of sediment if loading is high.

Erosion control BMPs are designed to avoid or minimize sediment delivery to streams (Appendix A). The degree to which they are effective depends on correct installation but also on unpredictable circumstances. For instance, conventional BMPs may fail when subjected to extreme rainfall or rain-on-snow events.

Any time heavy equipment is fueled or hydraulic systems are used during construction, fuel or hydraulic fluid has the potential to be spilled. Even though a Spill Prevention, Control, and Countermeasures Plan would be implemented, there is still a possibility that some of this material could be carried by stormwater and enter a stream. Because stormwater throughout a basin ends up in a stream, stormwater entering a storm drain far from a stream is eventually carried to it. Spill prevention BMPs are designed to avoid or minimize construction-related pollutants from entering streams; however, despite precautions, a low risk still exists for release of pollutants to streams in the study area.

Within each project segment, the risk of construction impacts would be a product of the total amount of ground-disturbing activity within each basin. Construction adjacent to or within streams, wetlands, or their buffers would have the highest risk of delivering sediment and pollutants to downstream waters. As noted in Section 1.4, Assumptions, detailed construction limits are not defined at this early phase in the project design. For this analysis, potential construction limits have been estimated, identifying areas where temporary impacts on streams and stream buffers could extend beyond the analytical buffer defined for the analysis of long-term impacts.

No Build Alternative

The No Build Alternative would not have any temporary, construction-related impacts on aquatic species or habitat.

Segment A: Seattle to Shoreline

All six alternatives for Segment A would cross Thornton Creek at the same location and would, therefore, pose equal risks of construction-related impacts to the stream. The analysis of potential construction impacts did not identify any areas where temporary impacts on Thornton Creek or its buffer could extend beyond the analytical buffer defined for the analysis of long-term impacts. Because the tributary near Ridgecrest Park (Stream SSH3) is entirely within culverts within the study area, none of the alternatives would have the potential to deliver sediment or pollutants to that watercourse.

Segment B: Shoreline to Mountlake Terrace

Based on the amount of stream buffer area affected, Alternatives B1, B2, and B2A would pose equal risks of delivering sediment or pollutants to both the main stem of McAleer Creek and the northern (Stream SMT1) tributary (Table 4-1). In addition to the areas subject to long-term effects, 0.4 acre of the stream buffer for McAleer Creek could be subject to temporary, construction-related impacts under all three alternatives, as would 0.2 acre of the buffer for Stream SMT1. Although a larger area of the McAleer Creek buffer would be subject to potential long-term impacts under Alternative B4 compared to the other Segment B alternatives (Table 4-1), the analysis of potential construction impacts did not identify any areas where the temporary impacts of Alternative B4 on the McAleer Creek buffer would extend beyond the analytical buffer defined for the analysis of long-term impacts. Similarly, Alternative B4 would subject a smaller portion of the buffer on Stream SMT1 to potential long-term impacts, compared to the other Segment B alternatives (Table 4-1), and none of that buffer would be subject to potential additional construction impacts. As a result, the risk of construction-related impacts to both McAleer Creek and Stream SMT1 would likely be less under Alternative B4 than under the other alternatives. Because the southern tributary to McAleer Creek (Stream SSH2) is entirely within culverts in the study area, none of the alternatives would have the potential to deliver sediment or pollutants to that watercourse.

Segment C: Mountlake Terrace to Lynnwood

Based on the amount of wetlands, wetland buffers, and stream buffers that would fall within the project footprint along the northern tributary to Scriber Creek (Stream SLY1) and in the Scriber Creek wetland complex, Alternative C1 would have the lowest risk of construction-related impacts. The risk for Alternative C3 would be slightly higher, and that for Alternative C2 would be highest. The analysis of potential construction impacts identified approximately 0.1 acre of the Scriber Creek buffer that would be subject to potential additional construction impacts under Alternative C1, and less than 0.1 acre of the Stream SLY1 buffer that would be similarly affected under Alternatives C2 and C3. As noted above, the portions of Scriber Creek that would be crossed by Alternatives C2 and C3 are within the wetland complex and have no defined channel. As such, no buffers could be applied to these streams for GIS analysis.

4.2 Vegetation, Terrestrial Wildlife, and Wildlife Habitat

Construction of the Lynnwood Link Extension could affect vegetation in the study area, including terrestrial wildlife species associated with those habitats. Analyses in this subsection address the potential long-term, construction-related, and indirect impacts of each alternative on vegetation and wildlife. These impacts are defined as follows:

- Long-term impacts include permanent loss or degradation of terrestrial habitat (including habitat connectivity); disturbance due to increased human access, noise, and light; impacts on rare plant populations; or contributions to the spread of noxious or invasive plant species.
- Construction-related impacts include temporary loss or degradation of terrestrial habitat, or disturbance due to construction-related noise and light.
- Indirect and secondary impacts include those related to residential and commercial development near stations, or mitigation measures for other resources.

As noted in Section 3.2.3, no ESA-listed or state-listed threatened or endangered plant or wildlife species are known or expected to occur in the study area. Analyses in this section, therefore, address plant and wildlife species collectively, basing the anticipated impacts on the relationships between habitats and individual species or species groups. The following subsections describe the potential impacts on vegetation and wildlife that could result from this project. Discussions of long-term and construction-related impacts include assessments of the range of impacts that could occur for each segment and alternative. Actual impacts would depend on final alternative selection and design, construction footprint and methods, BMPs implemented during construction, and performance of post-construction restoration, including revegetation of disturbed areas and mitigation measures for areas protected under local Critical Areas Ordinances.

4.2.1 Long-Term Impacts

Direct long-term impacts would occur where the project limits cross land cover types that support vegetation or other wildlife habitat features. Clearing for project construction would also increase the risk of contributing to the spread of noxious or invasive weed species. Noise and human activity associated with operation of the light rail system may also result in long-term impacts. The project limits include the guideway, station footprints (including parking), roadway improvements, storm drainage ponds, and other ancillary features. For the Draft EIS, all impacts within these areas are considered long-term. As explained in Section 1.4 (Assumptions), analyses in this report treat the construction of both at-grade and elevated guideways and other structures as long-term impacts on vegetation and other resources within the structure's footprint. Sound Transit will re-evaluate this assumption and identify temporary construction limits during the Final EIS and/or the permitting phase.

Vegetation and Wildlife Habitat Loss

The effects of project construction on vegetation and wildlife habitat would vary, depending on the land cover type within the project clearing limits. The effects on the Urban cover type, for example, would be minimal. Little or no vegetation is present in areas classified as Urban; therefore, the replacement of existing cover with guideways or other facilities would constitute a minimal change in the characteristics of such areas or their ability to support wildlife. Similarly, areas classified as Residential or Maintained Vegetation are highly modified from pre-development conditions and typically occur alongside roads and other areas with low habitat value. In addition, invasive species are common in such areas. Although project construction in most Residential or Maintained Vegetation areas would constitute a change from a vegetated area to impervious surface, the effects of such construction on vegetation and wildlife would, therefore, be minimal. (The effects of increases in impervious surface are discussed in Section 4.1.1). No areas classified as Open Water fall within the footprint of any of the project alternatives.

The two cover types in which project construction could cause changes in habitat quality are Shrub and Forest. The following subsections focus on assessing the range of impacts that could occur on these two land cover types for each segment and alternative. In both cover types, replacement of existing vegetation with project features would represent a loss of structural and biotic diversity associated with the variety of plant and wildlife species previously present in the cleared areas. In areas classified as Shrub, the potential for adverse effects would vary with site-specific conditions. For example, areas dominated by dense growth of invasive species (e.g., Himalayan blackberry, Japanese knotweed [*Polygonum cuspidatum*]) typically do not support diverse and abundant communities of vegetation and wildlife. Conversely, areas with more native species (e.g., salal, salmonberry, or red alder) typically support a greater number and variety of species.

For this analysis, the amount of Forest cover affected by each alternative is used to indicate the potential for long-term adverse effects on vegetation and wildlife. Construction of project features would have a greater likelihood of reducing the habitat quality of forested areas than other cover types. Clearing of trees, snags, and understory vegetation would cause the loss of nesting and foraging sites for many species of birds, as well as a reduction in the availability of hiding cover for small mammals. The introduction of cleared areas through patches of contiguous forest cover would result in the fragmentation of the forested habitat. By increasing the amount of edge habitat (where sensitive wildlife species are less protected from weather extremes and are more susceptible to predation from species that are adapted to open habitats), fragmentation compounds the effects of habitat loss by reducing the quality of the remaining habitat.

Noxious Weeds

Noxious weeds and exotic plants rapidly colonize disturbed sites such as construction areas. They prevent native species from becoming re-established following ground disturbance, spread into undisturbed areas where they can affect habitat value on additional lands, and provide very poor wildlife habitat or forage. Several of the BMPs that would be implemented during project construction are intended to avoid, reduce, and control new infestations of noxious weeds (see Appendix A). Consistent and successful application of these measures would reduce potential habitat disturbance and improve existing habitats that are already disturbed.

Despite the implementation of BMPs, it is likely that some especially invasive weeds such as Himalayan blackberry could become established in some areas disturbed during construction. However, the Lynnwood Link Extension could also improve conditions where existing noxious weeds such as Himalayan blackberry, reed canarygrass, or Japanese knotweed dominate vegetated areas within the study area. Because of project construction, such areas would either be replaced with project features or disturbed and replanted with native species, increasing the potential for re-establishment of native vegetation.

Noise and Human Activity

Both noise and human activity have been demonstrated to displace wildlife from occupied habitats, interfere with the ability to hear territorial songs in birds, interfere with mating and alarm calls of amphibians and small mammals, and interfere with raptor foraging activities. Numerous studies document the avoidance of roads and similar facilities by wildlife and the disturbance of wildlife by human activity at varying distances. However, most of these studies have considered the impacts of new construction or facilities and human activities in areas where none or few of these facilities or human activities previously existed. This is not the case in the Lynnwood Link Extension study area, which is within or immediately adjacent to the I-5 corridor for nearly its entire length. In addition to the noise and vehicle traffic on the highway, regular human activity associated with residential and commercial development is a common feature of the landscape throughout the study area. Wildlife that use habitats adjacent to the project alternatives are more or less accustomed to some level of human activity and noise. Impacts would be related to changes in noise levels and the types of human activities.

In areas where the project alternatives pass through areas outside of the I-5 corridor, the construction of guideways, stations, or other facilities could constitute the introduction of a new source of disturbance in areas where wildlife species are less accustomed to noise and human activity. Animals that are sensitive to noise, light, or other human-related disturbance may be displaced from otherwise suitable habitat, potentially leading to competition with animals that occupy suitable habitat at other, less developed sites. Such competition may produce increased stress and decreased reproductive success for affected individuals. Animals displaced from areas of suitable habitat may also be exposed to an elevated risk of predation or vehicle collisions while they are seeking new areas of suitable habitat. The degree of displacement would generally be proportionate to the change in noise levels over background conditions (which would be a product of the distance between noise sources and areas of occupied habitat), as well as the frequency, duration, and types of noise and human activity. Based on the limited amount of area that would be affected under any of the alternatives, such effects would not be expected to cause changes in the regional populations of any wildlife species.

No Build Alternative

The No Build Alternative would not have any direct long-term impacts on vegetation or wildlife. Conversely, implementing the No Build Alternative would not have potential beneficial environmental effects over the long term, such as concentrating residential and commercial development in planned growth centers. Land development in areas away from such centers could result in the degradation or loss of high-value habitat in outlying and rural areas.

Segment A: Seattle to Shoreline

As a result of the construction of guideways and stations in areas of Shrub along I-5, more of this cover type would be affected by project construction in Segment A than in either of the other two segments (Table 4-2). All six alternatives would affect approximately 10 to 11 acres of this cover type. The alternatives would also affect similar amounts of Forest cover, ranging between 1 and 2 acres. All affected areas of these two cover types would be immediately adjacent to the I-5 corridor. Impacts on these areas, therefore, are not expected to have substantial adverse effects on vegetation or wildlife resources in the study area. Most of the affected area in Segment A would consist of the Residential, Maintained Vegetation, and Urban cover types. None of the Segment A alternatives would affect any forested habitat within the priority habitat area at Northacres Park.

Segment B: Shoreline to Mountlake Terrace

Elevated portions of the guideway for Alternatives B1, B2, and B2A would pass through the patch of Forest cover (which WDFW [2012b] has identified as a priority habitat area) immediately north of the Mountlake Terrace Transit Center. Construction of a stormwater detention facility on the west side of I-5 near the Mountlake Terrace Station under Alternative B2 and Alternative B2A would affect additional Forest cover. As a result of construction in these and other portions of Segment B, Alternative B2 and Alternative B2A would each affect approximately 11 acres of Forest, compared to 5 acres under Alternative B1 (Table 4-2). Potential adverse effects of alignment construction in forested areas under these alternatives would include habitat fragmentation and loss and an elevated risk of introducing invasive species, as well as disturbance of sensitive species, as described above. Substantially less Forest cover would be affected under Alternative B4, which would enter the I-5 median south of the Mountlake Terrace Transit Center, thereby avoiding the patch of forested habitat north of the facility (Table 4-2). Alternatives B1, B2, and B4 would affect similar amounts of Shrub, ranging between 1 and 2 acres. Construction of the 220th Street SW Station and associated parking garage would affect approximately 7 acres of Shrub habitat on the north side of the street.

A portion of the 11 acres of Forest habitat that would be affected by Alternative B2 and Alternative B2A consists of a strip of Forest cover along I-5 in south Lynnwood, north of 220th Street SW. Construction of at-grade portions of the guideway in this area would remove the existing cover altogether. The current habitat value of this strip is limited by its narrow, linear shape and by its location between I-5 and adjacent residential development.

Table 4-2. Long-Term Impacts on Land Cover Types by Project Alternative

	Acres within Project Footprint, by Land Cover Type				
Segment/Alternative	Forest	Shrub	Residential	Maintained Vegetation	Urban
Segment A: Seattle to Shoreline					
A1: At-grade/Elevated with NE 145th and NE 185th Street Stations	2	10	13	9	11
A3: Mostly Elevated with NE 145th and NE 185th Street Stations	1	10	13	7	4
A5: At-grade/Elevated with NE 130th, NE 155th, and NE 185th Street Stations	2	11	14	9	7
A7: Mostly Elevated with NE 130th, NE 155th, and NE 185th Street Stations	1	11	13	6	3
A10: At-grade/Elevated with NE 130th, NE 145th, and NE 185th Street Stations	2	10	15	10	8
A11: Mostly Elevated with NE 130th, NE 145th, and NE 185th Street Stations	2	10	13	7	4
Segment B: Shoreline to Mountlake Terrace					
B1: East Side to Mountlake Terrace Transit Center to Median	5	1	<1	6	7
B2: East Side to Mountlake Terrace Transit Center to West Side	11	2	1	2	5
B2A: East Side to Mountlake Terrace Transit Center to West Side with Optional 220th Street SW Station	11	7	1	3	7
B4: East Side to Mountlake Terrace Freeway Station to Median	3	1	<1	6	5
Segment C: Mountlake Terrace to Lynnwood					
C1: 52nd Avenue West to 200th Street SW, Option 1 (Median)	1	<1	1	1	9
C1: 52nd Avenue West to 200th Street SW, Option 2 (West of I-5)	1	<1	1	0	8

Table 4-2. Long-Term Impacts on Land Cover Types by Project Alternative

	Acres within Project Footprint, by Land Cover Type				
Segment/Alternative	**Forest**	**Shrub**	**Residential**	**Maintained Vegetation**	**Urban**
C2: 52nd Avenue West to Lynnwood Transit Center, Option 1 (Median)	<1	2	<1	1	8
C2: 52nd Avenue West to Lynnwood Transit Center, Option 2 (West of I-5)	1	2	<1	0	8
C3: Along I-5 to Lynnwood Park-and-Ride, Option 1 (Median)	1	1	0	2	16
C3: Along I-5 to Lynnwood Park-and-Ride, Option 2 (West of I-5)	2	1	<1	<1	15

Segment C: Mountlake Terrace to Lynnwood

Although the Segment C alternatives and options would cross the Scriber Creek wetland complex at different locations, they would not differ substantially in the amounts of Forest and Shrub they would affect (Table 4-2). The west of I-5 option (Option 2) of Alternative C3 would affect more Forest cover than the other alternatives and options. Most of the affected area would consist of a strip of Forest and Shrub along I-5 east of 52nd Avenue West. The guideway would be elevated in this area, limiting the potential for adverse effects on vegetation and wildlife in the area. In addition, the current habitat value of this strip is limited by its narrow, linear shape and its location between I-5 and adjacent commercial development. The two options of Alternative C2, which would pass through the center of the wetland complex, would affect more Shrub than the other alternatives (Table 4-2).

Notably, under all three alternatives, habitats in the Scriber Creek wetland complex would be spanned by elevated guideways. No construction of at-grade facilities would occur in the complex. Construction of elevated guideways can reduce the amount of water and sunlight reaching the vegetation underneath. Because the guideway structure would be relatively narrow (31 feet wide) and generally more than 15 feet above the ground surface, shading impacts on vegetation would be minimal. Constructing any of the Segment C alternatives would not modify the vegetation types beneath the elevated facilities or adversely affect the wildlife communities that use those habitats.

4.2.2 Construction Impacts

Similar to long-term impacts, construction-related impacts would occur where the project limits cross land cover types that support vegetation or other wildlife habitat features. Construction impacts would be temporary, however, and would be limited to the period during and immediately following project construction.

Construction activities under the light rail alternatives would temporarily affect vegetation and wildlife in the study area. Vegetation and wildlife habitat would be temporarily affected by clearing beyond the boundaries of the project footprint (e.g., for access roads or equipment storage areas), as well as clearing beneath elevated structures. Impacts would include the loss of vegetation and habitat, disturbance by noise and construction activity, and displacement of wildlife into potentially less suitable habitats. Wildlife would likely be displaced when construction begins. In areas of temporary vegetation clearance, wildlife species displaced by construction noise would likely return after construction is complete, provided human activity levels return to pre-construction levels. Any such return to pre-construction conditions would depend in part on the re-establishment of vegetation, however, and would not occur immediately. Herbaceous vegetation and some fast-growing shrubs would require 2 to 5 years to return to pre-project conditions. Areas of mature forest would require several decades. Species that forage on or near the ground, such as urban-dwelling small mammals or birds such as juncos and song sparrows, could return to their preferred habitats first. Species that require mature vegetation—especially those that use large shrubs and trees (e.g., wrens, chickadees, and woodpeckers)—would recolonize their preferred habitats last.

Although detailed construction limits are not defined at this early phase in the project design, potential construction limits have been estimated near streams, stream buffers, wetlands, and wetland buffers. These consist of areas where temporary impacts could extend beyond the analytical buffer defined for the analysis of long-term impacts. Additional staging areas could be identified later by the contractor, if needed. Direct construction impacts will be identified during the Final EIS and permitting phases. For the analyses in this document, it is assumed that the level of temporary construction impacts would be commensurate with the level of long-term impacts for each alternative. As with those analyses, the impact assessments focus on the Forest and Shrub land cover types, which would have the greatest potential to be adversely affected by construction of light rail facilities.

No Build Alternative

Implementation of the No Build Alternative would not have any temporary, construction-related impacts on vegetation or wildlife.

Segment A: Seattle to Shoreline

Because of the scarcity of the Forest and Shrub cover types in this portion of the study area, the alternatives would not differ substantially in their construction-related effects on vegetation and wildlife in Segment A.

Segment B: Shoreline to Mountlake Terrace

Based on the amount of Forest and Shrub cover that would fall within the project footprint, construction of Alternative B2 and Alternative B2A would have the greatest potential for construction-related impacts on vegetation and wildlife in the study area, followed by Alternative B1. Alternative B4, which would enter the I-5 median south of the Mountlake Terrace Transit Center and would, therefore, avoid impacts on most existing vegetated land cover and would have the least potential for construction-related impacts.

Segment C: Mountlake Terrace to Lynnwood

Based on the amount of the Scriber Creek wetland complex that would fall within the project footprint, construction of Alternative C2 would have the greatest potential for construction-related impacts on vegetation and wildlife in the study area. Alternative C3, which would cross near the southern end of the wetland complex, would affect slightly more of that area than Alternative C1. Based on the current habitat value of the strip of Forest and Shrub along I-5 east of 52nd Avenue West, the potential for the west of I-5 option (Option 2) of Alternative C3 to cause substantial construction-related effects on that patch of habitat would be minimal.

4.3 Wetlands

Construction of the Lynnwood Link Extension could have impacts on wetlands in the study area. These impacts can be direct (long term), indirect (long term), and temporary (construction):

- Long-term, direct impacts occur when all or a portion of a wetland is filled or excavated so that it becomes a non-wetland.
- Long-term, indirect impacts are typically disturbances that reduce or eliminate wetland functions without directly filling or excavating wetland soils. Indirect impacts occur when permanent wetland impacts result in reduction or elimination of wetland functions in the remaining wetland area, or when alterations to surface water flows separates the remnant wetland from its hydrologic source and prevents it from maintaining wetland hydrology. Reduction of wetland functions occurs when the wetland area is reduced to an extent that it is unable to provide some or all of its pre-disturbance functions. A wetland may become a complete loss when the majority of a wetland is directly affected, leaving the remaining wetland area with altered hydrologic sources and/or reduced pre-project functions.
- Impacts are considered temporary when wetland area and functions are lost for a period of time but are subsequently restored to existing conditions or better.

The following subsections describe the potential impacts on wetlands that could result from the light rail alternatives. The potential for wetland-related impacts to affect sensitive fish species is addressed in Section 4.1, Aquatic Species and Habitat. Discussions of long-term and construction-related impacts include assessing the range of impacts that could occur for each segment and alternative. Actual impacts would depend on the final alternative selection and design, construction footprint and methods, BMPs implemented during construction, performance of post-construction restoration of temporarily disturbed wetlands and buffers, and performance of compensatory mitigation for impacts on areas protected under local Critical Areas Ordinances.

4.3.1 Long-Term Impacts

Direct long-term (i.e., permanent) impacts would occur where the project limits cross wetlands or buffers. The project limits include the guideway, station footprints (including parking), roadway improvements, storm drainage ponds, and ancillary features. For the Draft EIS, all impacts within these areas are considered long term. As explained in Section 1.4 (Assumptions), analyses in this document treat the construction of both at-grade and elevated guideways (including the area underneath) and other structures as long-term impacts on wetlands and other resources within the structure's footprint. However, based on factors such as the width and height of the elevated guideway, some of these areas may not experience long-term impacts. During the Final EIS and/or the permitting phase, Sound Transit will re-evaluate these assumptions to provide a more detailed assessment of long-term impacts and identify detailed temporary construction limits to distinguish which wetlands and buffers could be restored.

Indirect long-term impacts might also occur due to construction and operation activities. Potential indirect long-term impacts for each project alternative include the following:

- Modification of wetland and wetland buffer vegetation (e.g., conversion of forest-dominated areas to shrub-dominated area due to vegetation maintenance intended to prevent trees and branches from interfering with operation of the light rail)
- Partial shading of wetlands and buffers from shadows cast beyond the elevated structure footprint
- Water quality degradation due to runoff from paved areas to surface waters or wetlands
- Alteration of wetland hydrology (disconnection, disruption, or change in water quantity)

Potential long-term impacts on wetlands and buffers for each segment and project alternative are summarized in Table 4-3 and shown on figures in Appendix D.

Table 4-3. Long-Term Impacts on Wetlands and Buffers by Project Alternative

Segment/Alternative	Wetland Area Affected (acres)	Wetland Buffer Area Affected[a] (acres)
Segment A: Seattle to Shoreline		
A1: At-grade/Elevated with NE 145th and NE 185th Street Stations	0.7	0.8[b]
A3: Mostly Elevated with NE 145th and NE 185th Street Stations	0.7	0.7[b]
A5: At-grade/Elevated with NE 130th, NE 155th, and NE 185th Street Stations	0.7	1.2[b]
A7: Mostly Elevated with NE 130th, NE 155th, and NE 185th Street Stations	0.7	1.2[c]
A10: At-grade/Elevated with NE 130th, NE 145th, and NE 185th Street Stations	0.7	0.7[b]
A11: Mostly Elevated with NE 130th, NE 145th, and NE 185th Street Stations	0.7	0.7[b]
Segment B: Shoreline to Mountlake Terrace		
B1: East Side to Mountlake Terrace Transit Center to Median	<0.1	0.6
B2: East Side to Mountlake Terrace Transit Center to West Side	0.5	1.3
B2A: East Side to Mountlake Terrace Transit Center to West Side with Optional 220th Street SW Station	1.7	0.9
B4: East Side to Mountlake Terrace Freeway Station to Median	0.1	0.7

Table 4-3. Long-Term Impacts on Wetlands and Buffers by Project Alternative

Segment/Alternative	Wetland Area Affected (acres)	Wetland Buffer Area Affected[a] (acres)
Segment C: Mountlake Terrace to Lynnwood		
C1: 52nd Avenue West to 200th Street SW, Option 1 (Median) and Option 2 (West of I-5)	<0.1 / <0.1	0.5 / 0.9
C2: 52nd Avenue West to Lynnwood Transit Center, Option 1 (Median) and Option 2 (West of I-5)	0.9 / 1.0	0.5 / 0.9
C3: Along I-5 to Lynnwood Park-and-Ride Option 1 (Median) and Option 2 (West of I-5)	0.2 / 0.2	0.5 / 1.0

[a] Based on local jurisdiction regulatory buffer widths (Seattle Municipal Code 25.09.160.C, Shoreline Municipal Code 20.80.330, Mountlake Terrace Municipal Code 16.15.090, and Lynnwood Municipal Code 17.10.051). Note that some impacts on wetlands and wetland buffers classified as long term would likely be temporary; see discussion in Section 1.4, Assumptions.

[b] 0.5 acre of these wetland buffer impacts are within the city of Seattle, not on publicly or privately owned parcels, and may not be subject to the City of Seattle Critical Areas Ordinance (Seattle Municipal Code 25.09).

[c] 0.4 acre of these wetland buffer impacts are within the city of Seattle, not on publicly or privately owned parcels, and may not be subject to the City of Seattle Critical Areas Ordinance (Seattle Municipal Code 25.09).

No Build Alternative

The No Build Alternative would not have any long-term impacts on wetlands or buffers in the study area. Conversely, implementing the No Build Alternative would not have potential beneficial environmental effects over the long term, such as implementing compensatory mitigation for impacts to wetlands, streams, and the regulatory buffers, or concentrating residential and commercial development in planned growth centers. Land development in areas away from such centers could cause degradation or loss of wetlands in outlying and rural areas.

Under the No Build Alternative, as well as all light rail alternatives, public agencies would continue current management practices within rights-of-way such as clearing for maintenance of vegetation and stormwater conveyance. Management activities would include periodic mowing, removal of dead or dying trees and tree limbs that could fall on the roadway, and clearing of brush that encroaches on the roadway. These activities would affect wetland vegetation and habitat by preventing trees and shrubs from becoming established in mowed areas, and preventing forested areas in the proposed right-of-way from developing natural features such as snags and downed wood.

Segment A: Seattle to Shoreline

The six Segment A alternatives are all located on the east side of I-5 from Northgate in Seattle to NE 185th Street in Shoreline, with the potential to affect nine wetlands totaling 0.7 acre (Table 4-3). Buffer impacts range from 0.7 to 1.2 acres[6]. Impact quantities show slight variations based on the rail alignment and location of stations and detention ponds. Most affected wetland and buffer areas

[6] 0.4 to 0.5 acre of these wetland buffer impacts are within the city of Seattle within road right-of-way (not on a publicly or privately owned parcel) and may not be subject to the City of Seattle Critical Areas Ordinance (Seattle Municipal Code 25.09).

are within the WSDOT right-of-way; they are degraded, vegetated by invasive species, and disconnected to other habitats by roadways and development.

A1: At-grade/Elevated with NE 145th and NE 185th Street Stations

Alternative A1 would result in 0.7 acre of wetland impact. Six wetlands would be considered a complete loss. The majority of each of these wetlands would be directly affected, leaving the remaining wetland area with altered hydrologic sources and/or reduced pre-project functions (although this could be considered an indirect impact, this analysis considers it likely to be concurrent with the project and therefore would be a direct impact). Four of these wetlands are located where the guideway is elevated (Wetlands WSE3, WSE5, WSE6, and WSH3); one occurs where the guideway is at-grade (Wetland WSH2), and one is at the NE 145th Street Station (Wetland WSH1). The NE 185th Street Station would not affect any wetlands. Portions of one other wetland and two potential wetlands would also be affected by elevated guideway (Wetland WSE2) or at-grade guideway (Wetlands PWSH1 and PWSH4).

The buffers of two wetlands (Wetlands WSE1 and WSE2) and two potential wetlands (Wetlands PWSH1 and PWSH4) would be affected, totaling 0.8 acre[7]. The guideway over the buffer of Wetlands WSE1 and WSE2 would be elevated, and the guideway would be at-grade through the buffers of Wetlands PWSH1 and PWSH4.

A3: Mostly Elevated with NE 145th and NE 185th Street Stations

The project limits and guideway alignment of Alternative A3 would be similar to Alternative A1 using the same station locations; however, most of the guideway would be elevated.

Alternative A3 would result in 0.7 acre of wetland impact. Similar to Alternative A1, six wetlands would be considered a complete loss with five of these located where the guideway is elevated (Wetlands WSE3, WSE5, WSE6, WSH2, and WSH3) and one at the NE 145th Street Station and associated detention ponds (Wetland WSH1). The NE 185th Street Station would not affect any wetlands. Portions of one other wetland and two potential wetlands would also be affected by the elevated guideway (Wetlands WSE2, PWSH1, and PWSH4).

This alternative (along with Alternatives A10 and A11) would affect buffers (0.7 acre[8]) the least. The buffers of two wetlands (Wetlands WSE1and WSE2) and two potential wetlands (Wetlands PWSH1 and PWSH4) would be affected by elevated guideway.

[7] The impacted buffers of Wetlands WSE1 and WSE2 (0.5 acre) are within the city of Seattle within road right-of-way (not on a publicly or privately owned parcel) and may not be subject to the City of Seattle Critical Areas Ordinance (Seattle Municipal Code 25.09).

[8] The impacted buffers of Wetlands WSE1 and WSE2 (0.5 acre) are within the city of Seattle within road right-of-way (not on a publicly or privately owned parcel) and may not be subject to the City of Seattle Critical Areas Ordinance (Seattle Municipal Code 25.09).

A5: At-grade/Elevated with NE 130th, NE 155th, and NE 185th Street Stations

The alignment for Alternative A5 is similar to A1, but Alternative A5 has stations at NE 130th Street and NE 155th Street, instead of NE 145th Street. Alternative A5 would result in 0.7 acre of wetland impact. Five wetlands would be considered a complete loss with four of these located where the guideway is elevated (Wetlands WSE3, WSE5, WSE6, and WSH3) and one where the guideway is at-grade (Wetland WSH2). The 130th Street, NE 155th Street, and NE 185th Street Stations would not affect any additional wetlands. Wetland WSH1 would not be a complete loss because no station is proposed at NE 145th Street. Only a small portion of the wetland would be crossed by elevated guideway. Portions of one other wetland and two potential wetlands would also be affected by elevated guideway (Wetlands WSE2, PWSH1, and PWSH4).

This alternative (along with Alternative A7) would affect buffers the most. The buffers of three wetlands (Wetlands WSE1, WSE2, and WSH1) and three potential wetlands (Wetlands PWSH1, PWSH4, and PWSH5) would be affected, totaling 1.2 acres[6]. The majority (1.0 acre) of buffer impacts are associated with the elevated guideway. The other 0.2 acre of impacts are associated with the NE 155th Street Station.

A7: Mostly Elevated with NE 130th, NE 155th, and NE 185th Street Stations

Alternative A7 has a mostly elevated guideway similar to A3, but similar station choices as Alternative A5. This alternative would result in 0.7 acre of wetland impact. Similar to Alternative A5, five wetlands would be considered a complete loss with four of these located where the guideway is elevated (Wetlands WSE3, WSE5, WSE6, and WSH3) and one where the guideway is at-grade (Wetland WSH2). The NE 130th Street, NE 155th Street, and NE 185th Street Stations would not affect any additional wetlands. Wetland WSH1 would not be a complete loss because no station is proposed at NE 145th Street. Only a small portion of the wetland would be crossed by the guideway. Portions of one other wetland and two potential wetlands would also be affected by elevated guideway (Wetlands WSE2, PWSH1, and PWSH4).

This alternative (along with Alternative A5) would affect buffers the most. The buffers of three wetlands (Wetlands WSE1, WSE2, and WSH1) and three potential wetlands (Wetlands PWSH1, PWSH4, and PWSH5) would be affected, totaling 1.2 acre[9]. The majority (1.0 acre) of buffer impacts are associated with the elevated guideway. The other 0.2 acre of impacts are associated with the NE 155th Street Station.

[9] The impacted buffers of Wetlands WSE1 and WSE2 (0.4 acre) are within the city of Seattle within road right-of-way (not on a publicly or privately owned parcel) and may not be subject to the City of Seattle Critical Areas Ordinance (Seattle Municipal Code 25.09).

A10: At-grade/Elevated with NE 130th, NE 145th, and NE 185th Street Stations

The project limits and guideway alignment of Alternative A10 would combine elements from Alternatives A1 and A5. Alternative A10 would result in 0.7 acre of wetland impact. Six wetlands would be considered a complete loss with four of these located where the guideway is elevated (Wetlands WSE3, WSE5, WSE6, and WSH3), one where the guideway is at-grade (Wetland WSH2), and one at the NE 145th Street Station (Wetland WSH1). The NE 130th Street and NE 185th Street Stations would not affect any additional wetlands. Portions of one other wetland and two potential wetlands would also be affected by elevated guideway (Wetlands WSE2, PWSH1, and PWSH4).

This alternative (along with Alternatives A3 and A11) would affect buffers (0.7 acre[10]) the least. The buffers of two wetlands (Wetlands WSE1 and WSE2) and two potential wetlands (Wetlands PWSH1 and PWSH4) would be affected. All buffer impacts are associated with the elevated guideway.

A11: Mostly Elevated with NE 130th, NE 145th, and NE 185th Street Stations

The project limits and guideway alignment of Alternative A11 would be similar to A7 except that a station at NE 145th Street is proposed instead of at NE 155th Street (similar to Alternative A3).

Alternative A11 would result in 0.7 acre of wetland impact. Similar to Alternative A3, six wetlands would be considered a complete loss with five of these located where the guideway is elevated (Wetlands WSE3, WSE5, WSE6, WSH2, and WSH3) and one at the NE 145th Street Station and associated detention ponds (Wetland WSH1). The NE 130th Street and NE 185th Street Stations would not affect any additional wetlands. Portions of one other wetland and two potential wetlands would also be affected by elevated guideway (Wetlands WSE2, PWSH1, and PWSH4).

This alternative (along with Alternatives A3 and A10) would affect buffers (0.7 acre[11]) the least. The buffers of two wetlands (Wetlands WSE1 and WSE2) and two potential wetlands (Wetlands PWSH1 and PWSH4) would be affected by the elevated guideway.

Segment B: Shoreline to Mountlake Terrace

Wetland impacts range from less than 0.1 acre (Alternative B1) to 1.7 acres (Alternative B2A). Buffer impacts range from 0.6 acre (Alternative B1) to 1.3 acres (Alternative B2) (Table 4-3).

B1: East Side to Mountlake Terrace Transit Center to Median

Alternative B1 would affect wetlands (less than 0.1 acre) and buffers (0.6 acre) the least. A small portion of Wetland WMT3 may be directly affected by the construction of stairs associated with the Mountlake Terrace Transit Center Station.

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[10] The impacted buffers of Wetlands WSE1 and WSE2 (0.5 acre) are within the city of Seattle within road right-of-way (not on a publicly or privately owned parcel) and may not be subject to the City of Seattle Critical Areas Ordinance (Seattle Municipal Code 25.09).

[11] The impacted buffers of Wetlands WSE1 and WSE2 (0.5 acre) are within the city of Seattle within road right-of-way (not on a publicly or privately owned parcel) and may not be subject to the City of Seattle Critical Areas Ordinance (Seattle Municipal Code 25.09).

The buffers of four wetlands (Wetlands WSH5, WMT1, WMT2, and WMT3) would be affected by elevated guideway and a portion of the buffer associated with Wetland WMT3 would be affected by the construction of stairs associated with the Mountlake Terrace Transit Center Station.

B2: East Side to Mountlake Terrace Transit Center to West Side and B2A: East Side to Mountlake Terrace Transit Center to West Side with Optional 220th Street SW Station

Alternative B2 would result in 0.5 acre of wetland impact. Portions of three wetlands would be affected by elevated guideway (Wetlands WMT5, WMT6, and WMT7) and a small portion (less than 0.1 acre) of one wetland (Wetland WMT3) may be directly affected by the construction of stairs associated with the Mountlake Terrace Transit Center Station.

This alternative would affect wetland buffers the most. The buffers of seven wetlands (Wetlands WSH5, WMT1, WMT2, WMT3, WMT5, WMT6, and WMT7) and one potential wetland (Wetland PWLY3) would be affected, totaling 1.3 acres. All buffer impacts would be associated with elevated guideway. In addition, a portion of the buffer associated with Wetland WMT3 would be affected by the construction of stairs associated with the Mountlake Terrace Transit Center Station.

Alternative B2A would result in the greatest amount of wetland impact. Construction of the 220th Street SW Station, I-5 ramp relocations, and associated stormwater ponds, would affect Wetlands WMT5 and WMT6 in their entirety. This would increase the total wetland impacts to 1.7 acres, while decreasing the buffer impacts to 0.9 acre.

B4: East Side to Mountlake Terrace Freeway Station to Median

Alternative B4 would affect the wetland and buffer of three wetlands (Wetlands WSH5, WMT1, and WMT2) with 0.1 acre of wetland impact and 0.7 acre of buffer impact. All wetland and buffer impacts would be associated with elevated guideway.

Segment C: Mountlake Terrace to Lynnwood

There are three alternatives, each with an option to start in the median (Option 1), or west of I-5 (Option 2), depending on the Segment B alternative. Wetland impacts range from less than 0.1 to 1.0 acre and buffer impacts range from 0.5 to 1.0 acre (Table 4-3). For each alternative, Option 1 would have less impact than Option 2. All Segment C wetland and buffer impacts are associated with elevated guideway.

C1: 52nd Avenue West to 200th Street SW

Alternative C1 would affect the wetlands the least. Alternative C1 (Option 1) would affect the wetland and buffer of one wetland (Wetland WLY4) resulting in less than 0.1 acre of wetland impact and 0.5 acre of buffer impact.

Alternative C1 (Option 2) would affect the same area of Wetland WLY4 as Option 1, in addition to a small portion (less than 0.1 acre) of Wetland WLY3, totaling less than 0.1 acre of impact. The buffer of these wetlands along with the buffer of Wetland PWLY3 would be affected, resulting in a loss of 0.9 acre.

C2: 52nd Avenue West to Lynnwood Transit Center

Alternative C2 would affect the wetlands the most. Alternative C2 (Option 1) would affect the wetland and buffer of one wetland (Wetland WLY4) resulting in 0.9 acre of wetland impact and 0.5 acre of buffer impact.

Alternative C2 (Option 2) would affect the same area of Wetland WLY4 as Option 1, in addition to a small portion (less than 0.1 acre) of Wetland WLY3, totaling 1.0 acre of impact. Buffers of these two wetlands along with the buffer of Wetland PWLY3 would be affected, resulting in a loss of 0.9 acre.

C3: Along I-5 to Lynnwood Park-and-Ride

Alternative C3 (Option 1) would affect the wetland and buffer of one wetland and one potential wetland (Wetlands WLY4 and PWLY1) resulting in 0.2 acre of wetland impact and 0.5 acre of buffer impact.

Alternative C3 (Option 2) would affect the same areas of Wetlands WLY4 and PWLY1 as Option 1, in addition to a small portion (less than 0.1 acre) of Wetland WLY3, totaling 0.2 acre of impact. Buffers of these three wetlands, along with the buffer of Wetland PWLY3, would be affected, resulting in a loss of 1.0 acre.

4.3.2 Construction Impacts

Wetlands could incur long-term temporary and short-term temporary impacts associated with construction:

- Long-term temporary impacts on wetlands occur when functions are affected in such a way that they can be restored to pre-impact performance, or will eventually be restored over time, but not within a year or so.
- Short-term temporary impacts last for a limited time, and functions return to pre-impact performance fairly soon (about 1 year or within one growing season of the impact).

The duration of construction impacts on emergent wetlands is generally short term while the impact duration on forested and scrub-shrub wetlands is typically long term. The amount of area that would be subject to long-term temporary versus short-term temporary impacts was not determined for this analysis because the boundaries of wetland vegetation types (emergent, scrub-shrub, and forested) have not yet been delineated. Such delineations would occur during the Final EIS and/or the permitting phase of this project. It is assumed that areas temporarily affected during construction (access roads, staging areas, etc.) would be restored to pre-project conditions after construction.

Potential construction impacts include vegetation clearing and temporary site grading and filling for access. Although detailed construction limits are not defined at this early phase in the project design, potential construction limits have been estimated near streams, stream buffers, wetlands, and wetland buffers. Temporary impacts on wetlands and wetland buffers are summarized in Table 4-4. In addition, some impacts on wetlands and wetland buffers that are categorized as long term would likely be temporary; see the discussion in Section 1.4, Assumptions. Construction impacts would be re-evaluated during the Final EIS and permitting phases.

Table 4-4. Construction Impacts on Wetlands and Buffers by Project Alternative

Segment/Alternative	Wetland Area Affected (acres)	Wetland Buffer Area Affected[a] (acres)
Segment A: Seattle to Shoreline		
A1: At-grade/Elevated with NE 145th and NE 185th Street Stations	-	-
A3: Mostly Elevated with NE 145th and NE 185th Street Stations	-	-
A5: At-grade/Elevated with NE 130th, NE 155th, and NE 185th Street Stations	-	-
A7: Mostly Elevated with NE 130th, NE 155th, and NE 185th Street Stations	-	-
A10: At-grade/Elevated with NE 130th, NE 145th, and NE 185th Street Stations	-	-
A11: Mostly Elevated with NE 130th, NE 145th, and NE 185th Street Stations	-	-
Segment B: Shoreline to Mountlake Terrace		
B1: East Side to Mountlake Terrace Transit Center to Median	<0.1	0.4
B2: East Side to Mountlake Terrace Transit Center to West Side	0.2	0.6
B2A: East Side to Mountlake Terrace Transit Center to West Side with Optional 220th Street SW Station	<0.1	0.4
B4: East Side to Mountlake Terrace Freeway Station to Median	-	-
Segment C: Mountlake Terrace to Lynnwood		
C1: 52nd Avenue West to 200th Street SW, Option 1 (Median) and Option 2 (West of I-5)	<0.1 / <0.1	0.2 / 0.2
C2: 52nd Avenue West to Lynnwood Transit Center, Option 1 (Median) and Option 2 (West of I-5)	0.3 / 0.3	0.1 / 0.1
C3: Along I-5 to Lynnwood Park-and-Ride Option 1 (Median) and Option 2 (West of I-5)	0.1 / 0.1	0.2 / 0.2

[a] Based on local jurisdiction regulatory buffer widths (Seattle Municipal Code 25.09.160.C, Shoreline Municipal Code 20.80.330, Mountlake Terrace Municipal Code 16.15.090, and Lynnwood Municipal Code 17.10.051).

Temporary construction impacts on the function of wetlands could occur within or adjacent to the construction limits for all light rail alternatives. Such impacts would be qualitative in nature and cannot be quantified. Examples of impacts to functions include soil compaction, accidental spills, noise and anthropogenic disturbance, potential increase of sediment input, and introduction of invasive species.

No Build Alternative

The No Build Alternative would not have any construction impacts on wetlands or buffers in the project vicinity. However, under the No Build Alternative as well as all light rail alternatives, public agencies would continue current management practices within rights-of-way such as clearing associated with maintenance of vegetation and stormwater conveyance (see long-term impacts discussion).

Segment A: Seattle to Shoreline

General construction limits beyond the project footprint were not identified for Segment A due to the alignment's location. It is assumed that because most of the alignment and associated features for the Segment A alternatives are situated on or adjacent to currently developed areas, no additional construction areas in wetlands or buffers would be required outside of the analytical buffer that was used to estimate long-term impacts. As noted in Section 1.4, Assumptions, not all areas within that analytical buffer would be subject to long-term impacts; some areas would be subject only to temporary impacts during construction. It was assumed for this analysis that the level of temporary construction impacts on vegetation would be commensurate with the level of long-term impacts. A similar assumption applies to impacts to wetlands and wetland buffers in Segment A. Based on that assumption, the construction-related effects of all six Segment A alternatives on wetlands would likely be the same, given that the long-term impacts would be the same for all six alternatives (Table 4-3). As for effects on wetland buffers, the long-term impacts of Alternatives A3, A10, and A11 on buffers would be less than those of the other alternatives, so the construction-related effects of these three alternatives would similarly be less than those of the other alternatives. Alternative A1 would have slightly more impacts and Alternatives A5 and A7 would likely have the most construction-related impacts on buffers.

Segment B: Shoreline to Mountlake Terrace

Alternative B4 would likely affect wetlands and buffers the least during temporary construction activities whereas Alternative B2 would likely have the most construction impact. Alternatives B1 and B2A would have similar acreages of construction impacts on wetlands and buffers.

Segment C: Mountlake Terrace to Lynnwood

Alternative C1 would likely affect the wetlands the least during construction whereas Alternative C2 would have the most impact. This is due, in large part, to the construction of a temporary roadway or placement of fill in the wetland area for the alternative, which could increase the impacts beyond the levels assumed for the permanent facility. Options 1 and 2 for the Segment C alternatives would have similar construction-related impacts on wetlands and buffers.

4.4 Indirect and Secondary Impacts

Indirect and secondary impacts include those related to residential and commercial development near stations, or impacts on other resources from mitigation measures. Indirect impacts also include potential interference with possible future habitat restoration projects. For example, the presence of guideways, stations, or other facilities near streams could affect the potential replacement of existing fish passage barriers by limiting options for locations and types of fish-passable crossing structures.

Under any of the light rail alternatives, the potential for development near stations to adversely affect ecosystem resources would be limited by several factors. First, all proposed stations would be located in areas that are already densely developed. Second, any new development in these areas would be subject to review under local Critical Areas Ordinances, which would trigger the implementation of mitigation measures and practices aimed at avoiding or minimizing the potential for adverse effects on wetlands, aquatic species and habitat, and other natural resources such as fish and wildlife habitat conservation areas.

In most locations, the potential for construction of the light rail alternatives to interfere with possible future fish habitat restoration projects would be minimal because project features would be designed and located to avoid streams. Construction would occur above stream OHWMs and the guideways would be elevated at open stream crossings. Exceptions could occur at three stream crossings. First, as discussed in Section 4.1.1, Long-Term Impacts, Scriber Creek lacks a defined channel where it passes through the wetland complex near the Lynnwood Transit Center. It is not possible, therefore, to determine the exact location of the OHWM. All three Segment C alternatives would be elevated where they pass over or near the wetland complex, but construction of elevated guideways could entail the installation of support columns within the wetland area. Based on the absence of human-made fish passage barriers within the wetland complex, however, it is unlikely that any fish passage improvement projects would be planned in that area.

The second location where construction of the light rail alternatives could interfere with possible future stream habitat restoration projects is at the crossing of Stream SSH3. Construction of an at-grade guideway under any of at the Segment A alternatives could limit options for future habitat restoration projects at that site. Based on the site's location immediately adjacent to and upstream of I-5, however, the potential for any such projects to be proposed at that location is low. In addition, as noted in Section 3.1.2, Streams in the Study Area, that watercourse is unlikely to be considered potential fish habitat.

The last location where construction of the light rail alternatives could interfere with possible future fish habitat restoration projects the is at the crossing of Stream SMT1, which has been identified as potential fish habitat. Construction of an elevated guideway under alternatives B1, B2, or B2A could limit options for future habitat restoration projects at that site. South of 236th Street SW, all three of those alternatives run parallel and adjacent to the mapped stream course for approximately 200 feet. The design of any future stream habitat restoration projects at that location could be complicated by the presence of support columns for the elevated guideway.

During the Final EIS, Sound Transit will review available GIS data from local municipalities and identify culverts along documented and potential fish-bearing streams in the study area. That assessment will be used to further inventory locations where fish access improvement projects may occur in the future.

Actions taken to mitigate for impacts on other resources may have beneficial impacts on wetlands and aquatic species and habitats. For example, many jurisdictional wetlands in the study area are surrounded by heavily developed areas or are otherwise isolated from stream networks. Some mitigation measures for these wetlands could take the form of wetland habitat improvement or restoration in areas that contribute more directly to the functioning of stream systems, including those that support fish. To the extent that this occurs, such mitigation efforts could have a beneficial effect on aquatic species and habitats.

4.5 Cumulative Impacts

NEPA defines cumulative effects as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7). Past actions and development have greatly changed the landscape in the study area and surrounding vicinity. Present and reasonably foreseeable future actions, including other transportation or infrastructure projects and other planned or pending land use actions or developments in the project vicinity could contribute to cumulative impacts on ecosystem resources in the study area. Impacts could include habitat loss, filling or clearing, altering hydrologic sources, or increasing pollutants and sedimentation in wetlands and streams. Not all reasonably foreseeable actions have the potential to result in adverse effects on the environment. For example, WSDOT and WDFW formed a cooperative program in 1991 to inventory and assess fish passage barriers on WSDOT facilities statewide. Culvert replacement and retrofitting projects through that program may improve fish access to streams in study area.

Several proposed site development projects could have some effect on ecosystem resources in the study area. These include a site in Mountlake Terrace south of 236th Street SW and the Mountlake Terrace Transit Center that is envisioned by the City of Mountlake Terrace to accommodate higher-density development. The Edmonds School District master plan includes developing a bus base and administration center north of I-5 and east of 52nd Avenue West in Lynnwood. Construction of this facility could affect ecosystem resources such the Scriber Creek wetland complex. Sound Transit, in a separate project funded through the Sound Transit 2 plan, is considering an operations and maintenance satellite facility alternative at the same location. The potential facility would be largely on previously developed parcels but a portion would extend into the Scriber Creek wetland complex. The impacts of these projects may include loss or degradation of vegetation, wildlife habitat, streams, wetlands, and associated buffer areas. These impacts would be both short term (e.g., temporary disturbance during construction) and long term (e.g., conversion of vegetated areas to impervious surface).

The potential for future projects to cause adverse effects on ecosystem resources would be limited. Any projects or land use actions would be subject to regulatory review and/or permitting under federal, state, and local regulations. Those review and permitting processes would trigger implementation of measures to avoid or minimize impacts on ecosystem resources. Such processes would also result in compensatory mitigation for any unavoidable impacts to streams or stream buffers, wetlands, or wetland buffers. If combined with the effects of the Lynnwood Link Extension, there would be higher cumulative effects on ecosystem resources than if the impacts of each project were considered on its own. However, if avoidance and mitigation measures such as those described below are applied for all projects, the effects would be reduced. Coordination among the project proponents could also help reduce impacts.

4.6 Potential Mitigation Measures

Sound Transit's policy [Executive Order No. 1, Establishing a Sustainability Initiative for Sound Transit (2007)] on ecosystem mitigation is to avoid impacts on environmentally sensitive resources as much as possible, and to provide adequate mitigation for unavoidable impacts to ensure no net loss of ecosystem function and acreage as a result of agency projects. The Lynnwood Link Extension would mitigate impacts on ecosystem resources in accordance with the mitigation sequencing requirements established by NEPA, the CWA, and local Critical Areas Ordinances.

According to NEPA (40 Code of Federal Regulations [CFR] paragraphs 1508.20), the sequence of mitigation is as follows:

a) Avoiding the impact altogether by not taking a certain action or parts of an action
b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation
c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment
d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action
e) Compensating for the impact by replacing or providing substitute resources or environments

Avoidance and Minimization

The avoidance and minimization of impacts was a guiding principle in the preliminary design of project alternatives. Sound Transit would comply with standard specifications, BMPs, and applicable federal, state, and local mitigation requirements during design, construction, and post-construction activities. BMPs typically required for avoidance and minimization of impacts on ecosystem resources are provided in Appendix A.

Restoration of Construction Impacts

Immediately following construction in each project segment, Sound Transit would begin restoring temporarily disturbed wetlands, streams (if any work occurs below the OHWM of any streams), and buffer areas. The length of time that would be required for site restoration to effectively replace habitat functions would vary. Temporarily disturbed wetlands, streams, and their buffers would be restored to pre-construction conditions where feasible and planted with appropriate native species when construction activities are finished.

Compensatory Mitigation

For any wetland, stream, and buffer impacts that could not be avoided or adequately minimized, Sound Transit would replace the area and functions lost through compensatory mitigation. As appropriate, Sound Transit would apply the federal Final Compensatory Mitigation Rule (40 CFR Part 230); appropriate current available agency regulations; guidelines established jointly by Ecology, the U.S. Army Corps of Engineers, and U.S. Environmental Protection Agency in *Wetland Mitigation in Washington State* (Ecology et al. 2006); and local Critical Areas Ordinances for the cities of Seattle, Shoreline, Mountlake Terrace, and Lynnwood.

Long-term impacts on wetlands and buffers could be mitigated by one or more of the following approaches:

- Approved mitigation bank
- King County in-lieu fee program
- Project-specific mitigation developed by Sound Transit

Also, Sound Transit would consider opportunities to establish mitigation in advance of the impacts from future construction of the Lynnwood Link Extension.

Approved Mitigation Bank

Currently, there are no existing approved mitigation banks in the project area basins. Although it is possible that a bank could become certified with service in the project area in the future, mitigation banking projects take considerable lead time for planning and approval.

King County In-Lieu Fee Program (Mitigation Reserves Program)

King County has developed an in-lieu fee program called the Mitigation Reserves Program, which was approved by the U.S. Army Corps of Engineers in March 2012 (King County 2012b). The program includes service areas within King County for the Thornton Creek basin and McAleer Creek basin in the Cedar River/Lake Washington watershed. Sound Transit would discuss this program with the Cities of Seattle and Shoreline to determine whether this program could be applicable to the Lynnwood Link Extension.

Project-specific Mitigation Developed by Sound Transit

Both the *Wetland Mitigation in Washington State* guidance and local codes require that wetland mitigation be completed at specific replacement ratios relative to the category of the wetland affected and the type of mitigation proposed (i.e., wetland creation, restoration, enhancement, or preservation) (Tables 4-5 through 4-9). These replacement ratios are guidelines from which case-by-case consideration start. To determine the appropriate mitigation ratios for this project, the project team may propose adjustments to these guidelines to consider unique project circumstances.

Table 4-5. Recommended Wetland Mitigation Ratios for Projects in Western Washington [a]

Category of Wetland Impacts	Re-establishment or Creation	Rehabilitation Only	Re-establishment or Creation (R/C) and Rehabilitation (RH)	Re-establishment or Creation (R/C) and Enhancement (E)	Enhancement Only
Category II	3:1	6:1	1:1 R/C and 4:1 RH	1:1 R/C and 8:1 E	12:1
Category III	2:1	4:1	1:1 R/C and 2:1 RH	1:1 R/C and 4:1 E	8:1
Category IV	1.5:1	3:1	1:1 R/C and 1:1 RH	1:1 R/C and 2:1 E	6:1

[a] Ecology et al. (2006)

Table 4-6. City of Seattle Wetland Mitigation Ratios[a]

Category of Wetland Impacts	Restoration or Creation	Enhancement
Category II	3:1	16:1
Category III	2:1	8:1
Category IV	1.5:1	6:1

[a] Seattle Municipal Code 25.09.160.E.5. Only applicable to development on publicly or privately owned parcels.

Table 4-7. City of Shoreline Wetland Mitigation Ratios[a]

Category of Wetland Impacts	Creation	Enhancement
Type II	3:1	12:1
Type III	2:1	8:1
Type IV	1.5:1	6:1

[a] Shoreline Municipal Code, Table 20.80.350D

Table 4-8. City of Mountlake Terrace Wetland Mitigation Ratios[a]

Category of Wetland Impacts	Creation	Enhancement
Category II	Forested 3:1 Scrub/Shrub 2:1 Emergent 2:1	6:1 4:1 4:1
Category III	Forested 3:1 Scrub/Shrub 2:1 Emergent 2:1	6:1 4:1 4:1
Category IV	1.25:1	2.5:1

[a] Mountlake Terrace Municipal Code 16.15.110.C.2

Table 4-9. City of Lynnwood Wetland Mitigation Ratios[a]

Category of Wetland Impacts	Creation or Restoration	Enhancement[b]
Category II	3:1	-
Category III	2:1	-
Category IV	1.5:1	-

[a] Lynnwood Municipal Code 17.10.055
[b] Ratios not specified for enhancement

Compensatory mitigation would also be provided for long-term temporary impacts and conversion of wetlands from one type to another (e.g., forested wetland to emergent or scrub-shrub wetland). Generally, compensation for long-term temporary impacts is one-quarter of the typical ratios for long-term (permanent) impacts and one-half for conversion of wetlands. Impacts on buffers would generally be replaced at a minimum ratio of 1:1 using buffer enhancement.

The mitigation approach to compensate for unavoidable impacts caused by the project may consist of on-site mitigation, off-site mitigation, or a combination of the two. Opportunities for wetland mitigation occur in the study area and within the greater project vicinity.

In cooperation with resource agencies, Sound Transit would develop plans to mitigate the effects of the project on wetlands and buffers. Site selection would emphasize a watershed approach. To the extent possible, compensatory mitigation sites would be identified and compensate for lost values in-kind. It is environmentally and economically desirable to maximize the ecological functions at sites by consolidating as many mitigation requirements as possible at the least number of mitigation sites. It may be necessary to use several sites and approaches to mitigation given the size of this light rail project, the variety of impacts, complexity of identifying mitigation opportunities, and satisfying mitigation requirements.

Potential project-specific mitigation sites would be selected according to the federal Final Compensatory Mitigation Rule (40 CFR Part 230) and joint guidance developed by Ecology, the U.S. Army Corps of Engineers, and the U.S. Environmental Protection Agency (Hruby et al. 2009), which discuss the implementation of a watershed approach to selecting mitigation sites. This approach allows for a greater degree of flexibility in selecting mitigation sites and potentially greater value created for the watershed than the previous regulatory focus on on-site mitigation. Current potential sites under consideration for project-specific mitigation are described below.

North Seattle Community College Campus

Various opportunities for wetland restoration and enhancement may be present on the North Seattle Community College Campus, although other projects proposed in the vicinity may reduce the area available.

City of Seattle or Seattle Public Utilities Potential Projects

Sound Transit could fund projects identified by Seattle Public Utilities on Seattle-owned property, such as at the confluence of the North and South Branches of Thornton Creek (near 35th Avenue NE and NE 110th Street), or near the South Branch Thornton Creek riparian corridor northeast of the intersection of NE 103rd Street and Roosevelt Way NE.

Jackson Park Golf Course/5th Avenue NE

Potential wetland and riparian mitigation could be accomplished along the east side of the 5th Avenue NE right-of-way and the Jackson Park Golf Course, particularly along the North Branch of Thornton Creek.

NE 155th Street Station Vicinity

Wetland creation may be possible south of the new NE 155th Street Station near the proposed stormwater pond in the vicinity of Wetlands PWSH4 and PWSH5.

Ballinger Lake Golf Course

The City of Mountlake Terrace will be transitioning the Ballinger Lake Golf Course to a passive park/open space, which could create wetland restoration opportunities.

Scriber Creek Wetland Complex (Wetland WLY4)

Wetland and stream mitigation opportunities are present in the Scriber Creek vicinity near the Lynnwood Transit Center on parcels that are under both public and private ownership, including parcels that could be acquired by Sound Transit because they intersect with areas needed for the light rail right-of-way. These mitigation opportunities may include wetland creation, restoration, or enhancement.

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APPENDIX A

Best Management Practices for Ecosystem Resources

APPENDIX A – BEST MANAGEMENT PRACTICES FOR ECOSYSTEM RESOURCES

This description of measures is a compilation of best management practices (BMPs) that can be used to avoid and minimize temporary construction and long-term impacts of the Lynnwood Link Extension on sensitive ecosystem resources. These BMPs are either required by state or federal agencies to obtain permits required for the project or may be required to comply with typical permit conditions. They are based on Sound Transit's knowledge of permit requirements and experience with conducting environmental compliance and permitting for numerous other projects in the Puget Sound area.

Construction Best Management Practices

General Best Management Practices for All Sensitive Areas

Sound Transit or its construction contractor would work within construction limits marked with fencing and signage. The intent is to prevent unintended impacts on riparian vegetation, wetlands, woodlands, and other sensitive sites outside of the construction limits. The construction limits would be clearly marked with high-visibility construction fencing and signage prior to any ground-disturbing or construction-related activities. There would be no direct site disturbance outside of the construction limits.

Soil or rock stockpiles, excavated materials, or excess soil materials would be prevented from eroding into sensitive habitats, including stream channels, wetlands, and riparian areas outside of the construction limits by high water or storm runoff. Sound Transit or its construction contractor would develop a Temporary Erosion and Sediment Control (TESC) plan that would be implemented during construction. This TESC plan would address potential erosion during construction. Examples of BMPs that would be implemented under the TESC plan include silt fences; protective ground covers such as straw, plastic sheeting, or jute mats; and straw bales in drainage features. The contractor would implement the plan before discharging or allowing runoff from the site. Monitoring requirements specified in the TESC would provide feedback to ensure that the erosion control practices are operating properly and effectively. BMPs would limit soil compaction in sensitive areas. For example, tracked equipment rather than tire-based equipment may be used in areas that are sensitive to adverse effects from soil compaction. Temporary work bridges could be used in extremely sensitive areas, such as the Scriber Creek wetland complex.

Fish and Aquatic Habitat Protection

If a Hydraulic Project Approval (HPA) is required, all work would comply with the terms and conditions set forth in the HPA issued for the project by the Washington Department of Fish and Wildlife (WDFW). The HPA program is the vehicle through which WDFW regulates activities that affect the bed or flow of waters of the state for the protection of fish life. An HPA is required for construction or structural work associated with any bridge structure or culvert construction within or below the OHWM of waters of the state.

Seasonal restrictions (i.e., work windows) applied to work conducted below the OHWM would be as required by an HPA issued by WDFW and by the Section 404 permit issued by the U.S. Army Corps of Engineers (Corps). In accordance with typical requirements of an HPA, when large woody debris must be moved to allow the reasonable use of an over-water or in-water facility, the large woody debris would be returned to the water downstream, where it would continue to provide aquatic habitat function. To reduce the risk of adverse effects on migrating salmonids during project construction, Sound Transit would require construction contractors to direct lighting away from fish-bearing waters and to place hoods or shields on lights, as needed, to minimize the amount of backlight or dispersed light cast toward the water's surface.

If any culverts need to be installed or extended on fish-bearing or potentially fish-bearing streams, design and construction would comply with Washington Administrative Code (WAC) 220-110-070 (http://wdfw.wa.gov/hab/engineer/w2201170.htm) regarding fish passage requirements. Any affected streambeds, stream banks adjacent to culverts, and at the stream relocation reach, would be permanently restored after in-water work with plantings of native or approved woody and herbaceous species within 1 year of completion of each phase of construction. Bank protection would follow the guidelines set forth in WDFW's *Integrated Streambank Protection Guidelines* (http://wdfw.wa.gov/hab/ahg/ispgdoc.htm).

Water Quality Protection

The federal Clean Water Act (CWA) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the CWA is the National Pollutant Discharge Elimination System (NPDES) permit program, which is administered by the U.S. Environmental Protection Agency (EPA). EPA has delegated responsibility to administer the NPDES permit program to the State of Washington on the basis of Chapter 90.48 of the Revised Code of Washington, which defines the authority and obligations of the Washington State Department of Ecology (Ecology) in administering the wastewater discharge permit program.

Ecology's construction stormwater general permit is required for certain construction activities. The goal of the permit program is to reduce or eliminate stormwater pollution and other impacts on surface waters.

The project must complete a Notice of Intent (NOI) for coverage under the permit. The project would also develop a Construction Stormwater Pollution Prevention Plan that implements BMPs for identifying, reducing, eliminating, or preventing sediment and erosion problems on site. The Construction Stormwater Pollution Prevention Plan would include a TESC; Spill Prevention, Control, and Countermeasures Plan; Concrete Containment and Disposal Plan; Dewatering Plan; and a Fugitive Dust Plan.

Any materials placed below the OHWM (e.g., cobble or boulders for energy dissipation at culvert ends, streambed gravel or other substrates) would be relatively clean and handled in a way to minimize turbidity. Methods would be used such that it is not expected the project would exceed state water quality standards at the point of compliance (WAC 173-201A) when flow is restored to the work site. To the fullest extent practicable, culverts would be installed, modified, and/or replaced in isolation from stream flow (if there is flow during the work window) by means of a temporary bypass flume, diversion culvert, or by temporarily pumping flow around the in-water work zone. Any temporary dewatering of the in-water work zone would be preceded by work area isolation and fish removal/relocation (as necessary). Fish handling would be conducted by a trained and qualified biologist. Turbid water produced during the course of in-water work would be prevented from discharging to fish-bearing waters or wetlands. Turbid wastewater may be routed to temporary or permanent detention facilities, or to upland areas that provide adequate rates of infiltration.

In accordance with conditions of a typical HPA, heavy equipment used during the course of in-water work would operate from above the OHWM wherever possible. Use of equipment below the OHWM would be limited to that necessary to gain position for work. Drive mechanisms would not enter or operate below the OHWM, except under the terms of the HPA issued by WDFW.

Uncured concrete and/or concrete byproducts would be prevented from coming in contact with streams or water conveyed directly to streams during construction. Any water having direct contact with uncured concrete would be contained and treated or removed from the site (as appropriate) to prevent discharge to streams or wetlands.

If any permanent footings or drilled or pile-driven shafts are installed below the OHWM, installation would be conducted in a manner consistent with Section 404 and other permits issued for the project by the Corps and other parties (as applicable). When constructing drilled shafts, the contractor would ensure that all drilling equipment, drill recovery and recycling pits, and any waste or spoil produced are properly contained to prevent discharge of drill wastes or fluids to any surface water or wetlands.

In accordance with typical Section 401 permit requirements, turbidity would be monitored if in-water work occurs when water is flowing in the streams. Equipment (excluding track-mounted equipment, large cranes, and other relatively immobile equipment) would be refueled and maintenance activities conducted at a distance from the nearest wetlands, ditches, and flowing or standing water approved by regulatory permits. Appropriate spill prevention measures and fuel containment systems would be designed and implemented to completely contain a potential spill as specified in the Spill Prevention, Control, and Countermeasures Plan. If flooding of the work area is expected to occur within 24 hours, all equipment and material would be evacuated from near-stream construction sites. An exception would be for efforts to avoid or minimize resource damage. All equipment that is used for in-stream or in-wetland work would be cleaned prior to operations below the OHWM. Wash water would not be discharged directly into any water body without pretreatment.

Vegetation and Wildlife Protection

The measures listed below would be implemented before and during project construction to avoid or minimize effects on vegetation and wildlife resources. These strategies would be implemented along with others designed to avoid or minimize effects on other resources, such as streams, wetlands, and soils. The additional strategies would be expected to provide more protection to vegetation and wildlife resources within and adjacent to streams and wetlands.

- Limit construction activity to a relatively small area immediately adjacent to the existing cleared area to minimize vegetation clearing and leave as much vegetation undisturbed as possible.
- As appropriate, restore areas temporarily affected by construction to pre-construction conditions or better through replanting or reseeding.
- Prepare and implement a revegetation plan that emphasizes the use of native species as appropriate.
- In accordance with the Migratory Bird Treaty Act, consult with USFWS on methods to implement during construction to avoid impacts on migratory birds. Such methods could include conducting vegetation clearing outside of the breeding season.

Control of Noxious and Invasive Species

The most effective means of reducing the introduction and spread of noxious and invasive species are weed control and restoration of disturbed construction sites with native plant species suitable for the type of site disturbed. Weed control prevention is important before and during construction. Per federal, state, and local requirements and guidance, Sound Transit would implement appropriate measures to minimize risk of introduction and spread of noxious and invasive species.

Design and Operation Best Management Practices

The project would install permanent stormwater runoff treatment and flow control facilities where needed to comply with Sound Transit's *Design Criteria Manual* (Sound Transit 2012).

The project would incorporate stormwater conveyance and flow control facilities that promote infiltration where applicable.

The project would select, design, and install runoff treatment BMPs that are best suited to the site conditions and best capable of achieving the required levels of treatment (subject to negotiation with the local jurisdiction and/or Ecology). These could include natural or engineered dispersion BMPs; biofiltration BMPs such as vegetated filter strips, biofiltration swales, or ecology embankments; wet-pool BMPs; and infiltration BMPs.

The project would route drainage to maintain existing stream basin contributing areas.

The project would implement pesticide application techniques, in accordance with current Ecology water quality agreements, to minimize the impact on aquatic and terrestrial environments.

APPENDIX B

Wetland Identification and Survey Report

SOUNDTRANSIT
RIDE THE WAVE

Lynnwood Link Extension

Technical Report

Wetland Identification and Survey

401 South Jackson Street
Seattle, WA 98104-2826

March 2013

North Corridor
Transit Partners
PARAMETRIX + PARSONS BRINCKERHOFF

Table of Contents

LIST OF TABLES

LIST OF FIGURES

List of Appendices

ACRONYMS AND ABBREVIATIONS

Dep	Depressional
DNR	Washington State Department of Natural Resources
Ecology	Washington State Department of Ecology
EIS	Environmental Impact Statement
FTA	Federal Transit Authority
GIS	geographic information system
GPS	global positioning system
HGM	hydrogeomorphic
I-5	Interstate 5
NEPA	National Environmental Policy Act
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
PAB	palustrine aquatic bed
PEM	palustrine emergent
PFO	palustrine forested
PHS	Priority Habitats and Species
PSS	palustrine scrub-shrub
PUB	palustrine unconsolidated bottom
Riv	Riverine
Slope	Slope
Sound Transit	Central Puget Sound Regional Transit Authority
SR	State Route
USFWS	U.S. Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife
WSDOT	Washington State Department of Transportation

1 INTRODUCTION

1.1 Project Overview

The proposed Lynnwood Link Extension would begin at Northgate in north Seattle and end at the Lynnwood Transit Center, and would be about 8.5 miles long. The project area is bounded by Puget Sound to the west and Lake Washington to the east, and is within the cities of Seattle and Shoreline in King County, and Mountlake Terrace and Lynnwood in Snohomish County. The corridor generally follows Interstate 5 (I-5), the major north-south route through Washington State, and serves a large commuter market that travels toward the city of Seattle or north to Everett, where many of the region's jobs are located.

The Lynnwood Link Extension alternatives would extend light rail from the planned north terminus of the Northgate Link Extension at Northgate, and continue north along I-5 to the city of Lynnwood. The full range of alternatives are still being determined as the Draft EIS process progresses, but the project anticipates alternatives that provide a variety of alignment and station locations, generally along I-5, for an elevated and at-grade double-track light rail line from Northgate to the Lynnwood Transit Center. The anticipated range of alternatives will be analyzed by Central Puget Sound Regional Transit Authority (Sound Transit) and Federal Transit Authority (FTA) in the Draft EIS.

1.2 Purpose of Report

This wetland identification and survey report was prepared to describe the wetlands within the Lynnwood Link Extension corridor to support the National Environmental Policy Act (NEPA) review process. This report will help facilitate agency review by providing detailed descriptions of project area wetlands including classifications, ratings, and buffers within each of the four municipalities. Wetland data gathered were used to assist the design of project alternatives.

1.3 Study Area

The study area for wetlands encompasses the areas within 200 feet of either side of the project alternatives or features. Descriptions also include those wetlands that are partly within or cross through the study area.

2 METHODS

The Lynnwood Link Extension wetland identification and survey involved agency coordination and review of existing information, as well as on-site field reconnaissance. Wetlands were identified in the field reconnaissance survey area (defined as public rights-of-way administered by the Washington State Department of Transportation (WSDOT) or other public agencies) using criteria provided in the Corps of Engineers Wetland Delineation Manual (1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0 (2010). Wetland boundary delineations were not conducted as part of this effort. Instead, wetland boundaries were estimated in the field and mapped using global positioning system (GPS) which were incorporated into the project geographic information system (GIS).

Wetlands that extend beyond the field reconnaissance survey area and other potential wetlands outside of the WSDOT or other public rights-of-way that appear to meet the wetland criteria were also incorporated into the GIS data base. Ground-truthing and data collection were not possible for these areas because no rights of entry were obtained for properties outside of the field reconnaissance survey area. Potential wetlands were identified by visual observation from public areas during the field reconnaissance; current local, state, and federal wetland maps; and critical area report figures or plans. Boundaries of potential wetlands were added to the project GIS database by incorporating GIS layers prepared by others or estimating and digitizing boundaries over aerial photographs. All wetlands in the study area will be delineated during the Final Environmental Impact Statement (EIS) and/or permitting phase of this project.

2.1 Data Gathered

Sound Transit conducted a review of existing literature and data to identify and characterize potentially affected wetlands in and near the project area. Existing documentation and information were compiled and reviewed first so that the field reconnaissance effort could focus on verifying data and filling information gaps. This information included published and unpublished reports, maps, Web sites, aerial photographs, and communication with local municipality staff familiar with wetlands within the project vicinity. The data sources are listed below.

2.1.1 Agency Coordination

Sound Transit contacted the following local jurisdictions:

- City of Seattle
- City of Shoreline
- City of Mountlake Terrace
- City of Lynnwood

2.1.2 Maps and Existing Documentation

Sound Transit reviewed the following resources:

- National Wetlands Inventory (NWI) data (U.S. Fish and Wildlife Service [USFWS])
- Natural Resources Conservation Service (NRCS) Soil Survey maps
- Priority Habitats and Species (PHS) data (Washington Department of Fish and Wildlife [WDFW])
- Washington State Department of Natural Resources (DNR) Natural Heritage Program database
- Critical Area Maps from local jurisdictions (Cities of Seattle, Shoreline, Mountlake Terrace, Lynnwood, King County, and Snohomish County)
- Sound Transit 2 Mitigation: Impact Summary and Analysis memorandum and GIS data (ESA Adolfson 2010)
- Aerial photography of the project corridor
- Regulatory compliance documents, such as the North Link Final Supplemental Environmental Impact Statement (Sound Transit 2006), Critical Areas Studies, wetland delineation reports, and stream studies by other agencies or consulting firms, as available

2.2 Field Reconnaissance Survey

Following the review of existing documentation and information, Sound Transit conducted a detailed field reconnaissance survey to confirm wetlands that could be affected. The field reconnaissance survey was conducted to identify, map, and describe wetlands within public rights-of-way administered by the WSDOT or other public agencies within the study area. In preparation for the field reconnaissance, a set of maps was developed showing data from local jurisdiction critical area maps, the NWI, and the Sound Transit 2 Mitigation: Impact Summary and Analysis (ESA Adolfson 2010). Existing data and the study area boundary were overlaid on aerial photographs at a scale of 1:24,000 (1 inch = 200 feet). Field investigations were performed between March 9 and July 23, 2012 (Appendix A). Photographs of each wetland were taken during the field reconnaissance (Appendix B).

Portions of wetlands that extend beyond the field reconnaissance survey area and other potential wetlands outside of the field reconnaissance survey area were identified based on visual observation from public areas during the field reconnaissance; current local, state, and federal wetland maps; critical area reports; and aerial photograph examination. These areas outside of the field reconnaissance survey area that appear to possess all three wetland indicators are included in this study.

2.3 Wetland Identification

Vegetation, soil, and hydrology conditions were documented as necessary at representative locations (sample plots) using methods outlined in the Corps of Engineers Wetland Delineation Manual

(1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0 (2010). These sample plots were identified in the field with labeled flagging and documented using a GPS unit. Both wetland and upland sample plots were documented. Wetland determination data forms were developed for all wetlands within the WSDOT or other public rights-of-way. Observations of existing conditions and characteristics were recorded for each wetland and associated buffer. Wetlands in the study area may have more than one USFWS class (PFO, PSS, PEM, PAB, or PUB). Typically, data would be collected at representative sample plots within each USFWS class, with a paired upland sample plot. However, for this level of review, only one sample plot was established per wetland. A paired upland sample plot was also established for each wetland (except for Wetlands WSE6 and WSE8 which had limited upland between the wetland boundary and roadway, consisting mostly of fill). Additional data may need to be collected when wetland delineations are to be performed during the Final EIS and/or permitting phase of this project. Wetland boundaries were estimated and mapped using GPS, and documented wetlands from other projects or sources will be included in the EIS wetland findings.

Each wetland identified in the study area received a unique identifier that is tracked in a GIS database. Wetlands were named based on whether they were field-identified wetlands ("W") or not field-identified/potential wetlands ("PW"), the city they are located in (Seattle = SE, Shoreline = SH, Mountlake Terrace = MT, or Lynnwood = LY), and the order they were encountered in the field (1,2,3, etc.). For example, Wetland WSE2 is the second field-identified wetland in Seattle. The field reconnaissance was conducted moving generally from south to north through the study area.

2.3.1 Hydrology

The project area was examined for evidence of hydrology. An area is considered to have wetland hydrology when soils are ponded or saturated consecutively 12.5 percent of the growing season. In King County (Seattle), the growing season generally lasts from the beginning of February (February 7) to the beginning of December (December 8) for a total of 304 days (USDA, NRCS 2010a), so ponding or saturation must be present for approximately 38 consecutive days. Primary indicators of hydrology include surface inundation and saturated soils. Secondary indicators of hydrology include drainage patterns, watermarks on vegetation, water-stained leaves, and oxidized root channels.

2.3.2 Soils

Generally, an area must have hydric soils to be considered a wetland. Hydric soil forms when soils are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper portion. Biological activities in saturated soil result in reduced concentrations of oxygen that in turn result in a preponderance of organisms that use anaerobic processes for metabolism. Over time, anaerobic biological processes result in certain soil color patterns, which are used as indicators of hydric soil. Typically, low-chroma colors are formed in the matrix of hydric soil. Bright-colored redoximorphic features form within the matrix under a fluctuating water table. Other important hydric soil indicators include organic matter accumulations in the surface horizon, reduced sulfur odors, and organic-matter staining in the subsurface. Soils were examined by excavating sample pits to a depth of 18 inches or more to observe the soil profiles, colors, and textures. Munsell color charts (Gretag Macbeth 2000) were used to describe the soil colors.

2.3.3 Vegetation

The dominant plants and their wetland indicator status were evaluated to determine whether the vegetation is hydrophytic. Hydrophytic vegetation is generally defined as vegetation adapted to prolonged saturated soil conditions. To meet the hydrophytic vegetation criterion, more than 50 percent of the dominant plants must be facultative, facultative wetland, or obligate, according to the plant indicator status category assigned to each plant species by the U.S. Fish and Wildlife Service (USFWS) (Reed 1988, 1993). Table 2-1 provides the definitions of the indicator status categories.

Table 2-1. Key to Plant Indicator Status Categories

Plant Indicator Status Category	Symbol	Definition
Obligate Wetland Plants	OBL	Plants that almost always (>99% of the time) occur in wetlands but may rarely (<1% of the time) occur in non-wetlands
Facultative Wetland Plants	FACW	Plants that often (67% to 99% of the time) occur in wetlands but sometimes (1% to 33% of the time) occur in non-wetlands
Facultative Plants	FAC	Plants with a similar likelihood (33% to 66% of the time) of occurring in both wetlands and non-wetlands
Facultative Upland Plants	FACU	Plants that sometimes (1% to 33% of the time) occur in wetlands but occur more often (67% to 99% of the time) in non-wetlands
Upland Plants	UPL	Plants that rarely (<1% of the time) occur in wetlands and almost always (> 99% of the time) occur in non-wetlands

Source: Environmental Laboratory (1987).

The scientific and common names for plants follow the currently accepted nomenclature. Most of the names are consistent with Plants of the Pacific Northwest Coast (Pojar and MacKinnon 1994) and the PLANTS Database (USDA, NRCS 2012b). During the field investigations by project biologists, dominant plant species were observed and recorded on field data sheets for each data plot (Appendix C).

2.4 Wetland Classification and Rating

Wetlands were classified according to the USFWS Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979). Hydrogeomorphic classifications were assigned to wetlands using the Corps methods established in a Hydrogeomorphic Classification System for Wetlands (Brinson 1993). Wetlands were rated according to local jurisdiction critical area ordinances (CAOs) and the revised Washington State Wetland Rating System for Western

Washington (Hruby 2004) (Appendix D). Buffer widths were assigned to wetlands based on local jurisdiction CAO requirements (Table 2-2).

Table 2-2. Wetland Categories and Buffer Requirements for Wetlands Located in the Lynnwood Link Extension Study Area

Local Rating System	Wetland Category/Type	Required Buffer Width (feet)
City of Seattle[a]	I	100-200
	II	60-85
	III	50
	IV	No buffer
City of Shoreline[b]	I	150
	II	115
	III	65
	IV	35
City of Mountlake Terrace[c]	I	300
	II	100
	III	65
	IV	50
City of Lynnwood[d]	I	110
	II	110
	III	75
	IV	40

[a] Based on Seattle Municipal Code (MC) 25.09.160.A and 25.09.160.C (buffer widths determined by habitat function scores). Only applicable to development on publicly or privately owned parcels.

[b] Based on Shoreline MC 20.80.320 and 20.80.330 (Standard buffer widths shown)

[c] Based on Mountlake Terrace MC 16.15.080 and 16..15.090

[d] Based on Lynnwood MC 17.10.050 and 17.10.051 (Standard buffer widths shown)

3 RESULTS

Sound Transit identified 35 wetlands in the study area. Of these, 24 were identified during field surveys within the field reconnaissance survey area (Table 3-1; Figures 3-1a to 3-1c) and 11 were identified as potential wetlands outside of the field reconnaissance survey area via existing documentation and public vantage points (Table 3-2; Figures 3-1a to 3-1c). Ground-truthing and data collection were not possible for the areas identified as potential wetlands because no rights of entry were obtained for properties outside of the field reconnaissance survey area. One of the field-identified wetlands is a constructed stormwater feature that was historically wetland (Wetland WSE2), and one wetland (Wetland WSH1) contains a ditched swale. Additional sites were investigated but were dropped from analysis after determining that they were constructed stormwater ponds, not wetlands. Of the field-identified wetlands, one wetland is rated a Category II, 18 are rated Category III, and 5 are rated Category IV according to the Washington State Wetland Rating System for Western Washington – Revised (Hruby 2004). Existing conditions of wetlands are described below, organized by local jurisdiction.

Table 3-1. Summary of Field-Identified Wetlands within the Lynnwood Link Extension Study Area

Wetland[a]	Size[b] (acres)	USFWS Class[c]	HGM Class[d]	Ecology Rating[e]	Local Rating[f]	Buffer Width[g] (feet)
WSE1	0.44[h]	PFO	Riv	III	III	60
WSE2	0.42	PSS,PAB	Dep	IV	IV	50
WSE3	0.21	PFO,PEM	Dep,Slope	III	III	60
WSE4	0.09	PFO	Dep	III	III	60
WSE5	0.16	PFO	Dep	III	III	60
WSE6	0.06	PSS	Dep	III	III	60
WSE7	0.14	PSS,PEM	Dep	III	III	60
WSE8	0.63[h]	PFO,PSS	Dep	III	III	60
WSH1	0.06	PFO,PSS,PEM	Dep,Slope	III	III	65
WSH2	0.09[h]	PEM	Dep,Slope	IV	IV	35
WSH3	0.03	PEM	Slope	IV	IV	35
WSH4	0.11[h]	PFO,PEM	Dep,Slope	III	III	65
WSH5	0.37	PFO	Dep	III	III	65
WMT1	0.29	PFO	Dep	III	III	65
WMT2	0.17	PFO	Riv,Slope	III	III	65
WMT3	0.01	PFO	Dep	III	III	65
WMT4	0.43[h]	PFO,PSS	Dep,Slope	III	III	65
WMT5	0.36	PFO,PEM	Dep	III	III	65
WMT6	1.24	PFO	Dep	III	III	65
WMT7	0.41[h]	PFO	Dep	IV	IV	50
WMT8	0.01	PFO	Slope	IV	IV	50

Table 3-1. Summary of Field-Identified Wetlands within the Lynnwood Link Extension Study Area (continued)

Wetland[a]	Size[b] (acres)	USFWS Class[c]	HGM Class[d]	Ecology Rating[e]	Local Rating[f]	Buffer Width[g] (feet)
WLY3	0.08	PSS	Dep	III	III	75
WLY4	17.00[h]	PFO,PSS,PEM	Riv,Dep	II	II	110
WLY6	0.05	PFO	Dep	III	III	75

[a] Wetlands are identified with alphanumeric codes: WYYn. W stands for wetland; YY = two-letter code for local jurisdiction (SE = Seattle, SH = Shoreline, MT = Mountlake Terrace, LY = Lynnwood); n = sequential identification number.

[b] Wetland size was determined by estimating and mapping wetland boundaries within the field reconnaissance survey area using GPS which were incorporated into the project GIS. Aerial photographs and visual observations from public vantage points in the field were used to determine the area of wetlands extending outside of the field reconnaissance survey area. Acreage represents the entire wetland area.

[c] Cowardin et al. (1979). USFWS = U.S. Fish and Wildlife Service. PAB = palustrine aquatic bed; PEM = palustrine emergent; PFO = palustrine forested; PSS = palustrine scrub-shrub

[d] Brinson (1993)

[e] Hruby (2004). HGM = Hydrogeomorphic; Dep = Depressional; Riv = Riverine; Slope = Slope

[f] Seattle MC 25.09.160.A, only applicable to development on publicly or privately owned parcels (Wetlands WSE1-WSE8), Shoreline MC 20.80.320 (Wetlands WSH1-WSH5), Mountlake Terrace MC 16.15.080 (Wetlands WMT1-WMT8), Lynnwood MC 17.10.050 (WLY3, WLY4, and WLY6)

[g] Seattle MC 25.09.160.C, only applicable to development on publicly or privately owned parcels (Wetlands WSE1-WSE8), Shoreline MC 20.80.330 (Wetlands WSH1-WSH5), Mountlake Terrace MC 16.15.090 (Wetlands WMT1-WMT8), Lynnwood MC 17.10.051 (WLY3, WLY4, and WLY6)

[h] Wetland extends outside of the field reconnaissance survey area.

Table 3-2. Summary of Potential Wetlands within the Lynnwood Link Extension Study Area

Wetland[a]	Size[b] (acres)	USFWS Class[c]	HGM Class[d]	Ecology Rating[e]	Local Rating[f]	Buffer Width[g] (feet)
PWSH1	0.05	PEM	Slope	unknown	III	65
PWSH3	0.10	PFO,PEM	unknown	unknown	III	65
PWSH4	0.19	PFO	Slope	unknown	III	65
PWSH5	0.07	PEM	Slope	unknown	III	65
PWMT1	0.02	PEM	Slope	III	III	65
PWMT2	0.02	PFO	Dep	III	III	65
PWLY1	0.07	PSS	Dep	III	III	75
PWLY2	0.26	PFO	Dep	III	III	75
PWLY3	0.07	PEM	Dep	III	III	75
PWLY4	0.03	PFO	Dep	III	III	75
PWLY5	0.03	PUB	Dep	III	III	75

[a] Potential wetlands are identified with alphanumeric codes: PWYYn. PW stands for potential wetland; YY = two-letter code for local jurisdiction (SE = Seattle, SH = Shoreline, MT = Mountlake Terrace, LY = Lynnwood); n = sequential identification number.

[b] Wetland size was estimated using aerial photographs and visual observations from public vantage points in the field. Acreage represents the entire wetland area.

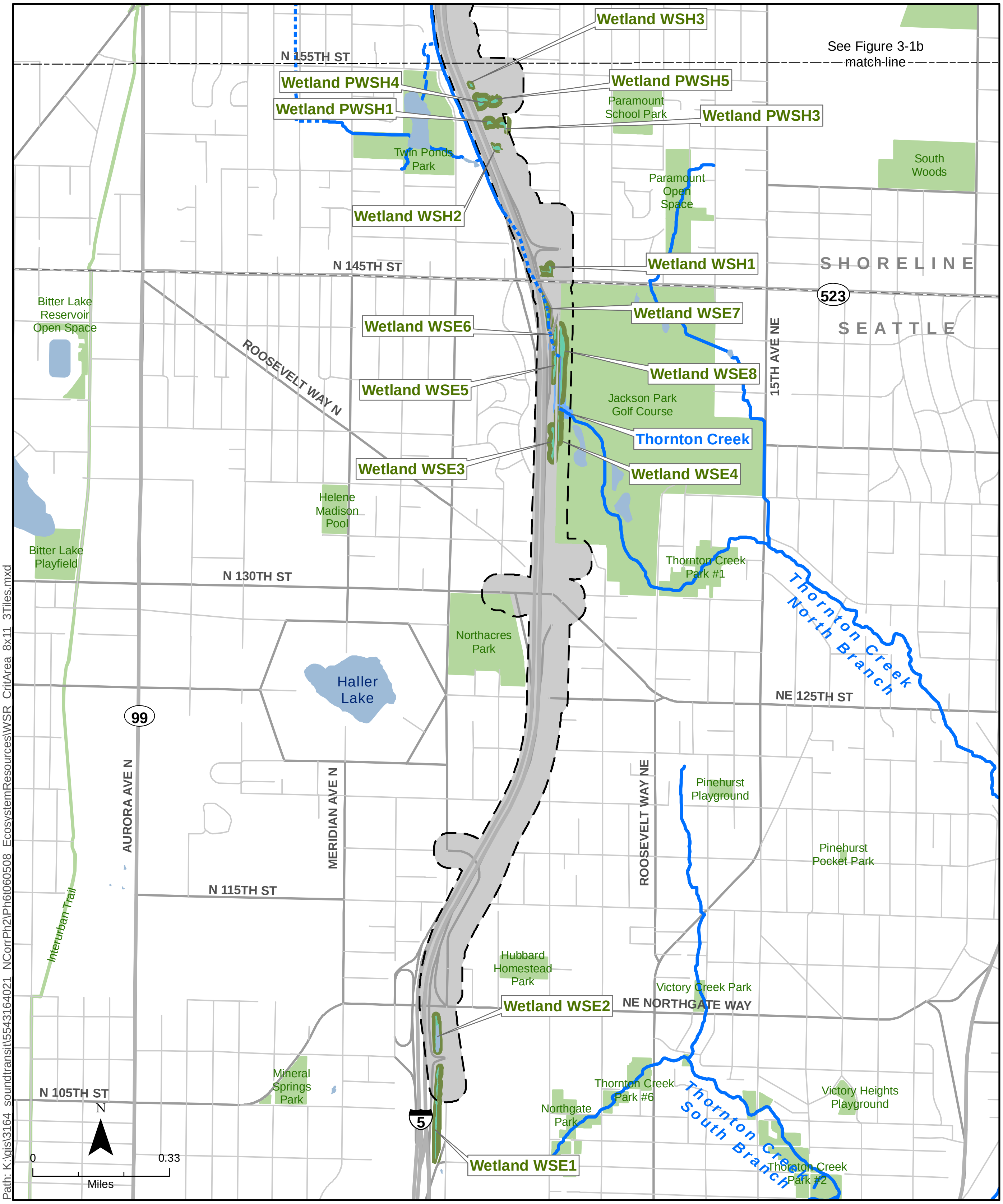
[c] Cowardin et al. (1979). USFWS = U.S. Fish and Wildlife Service. PEM = palustrine emergent; PFO = palustrine forested; PSS = palustrine scrub-shrub; PUB = palustrine unconsolidated bottom

[d] Brinson (1993). HGM = Hydrogeomorphic; Dep = Depressional; Riv = Riverine; Slope = Slope

[e] Hruby (2004). Sound Transit did not rate wetlands because they are outside of the field reconnaissance area. Ratings are based on ratings provided in existing documentation. If existing documentation did not provide a rating, then it was listed as unknown.

[f] Shoreline MC 20.80.320 (Wetlands PWSH1-PWSH5), Mountlake Terrace MC 16.15.080 (Wetlands PWMT1-PWMT2), Lynnwood MC 17.10.050 (PWLY1-PWLY5)

[g] Shoreline MC 20.80.330 (Wetlands PWSH1-PWSH5), Mountlake Terrace MC 16.15.090 (Wetlands PWMT1-PWMT2), Lynnwood MC 17.10.051 (PWLY1-PWLY5)



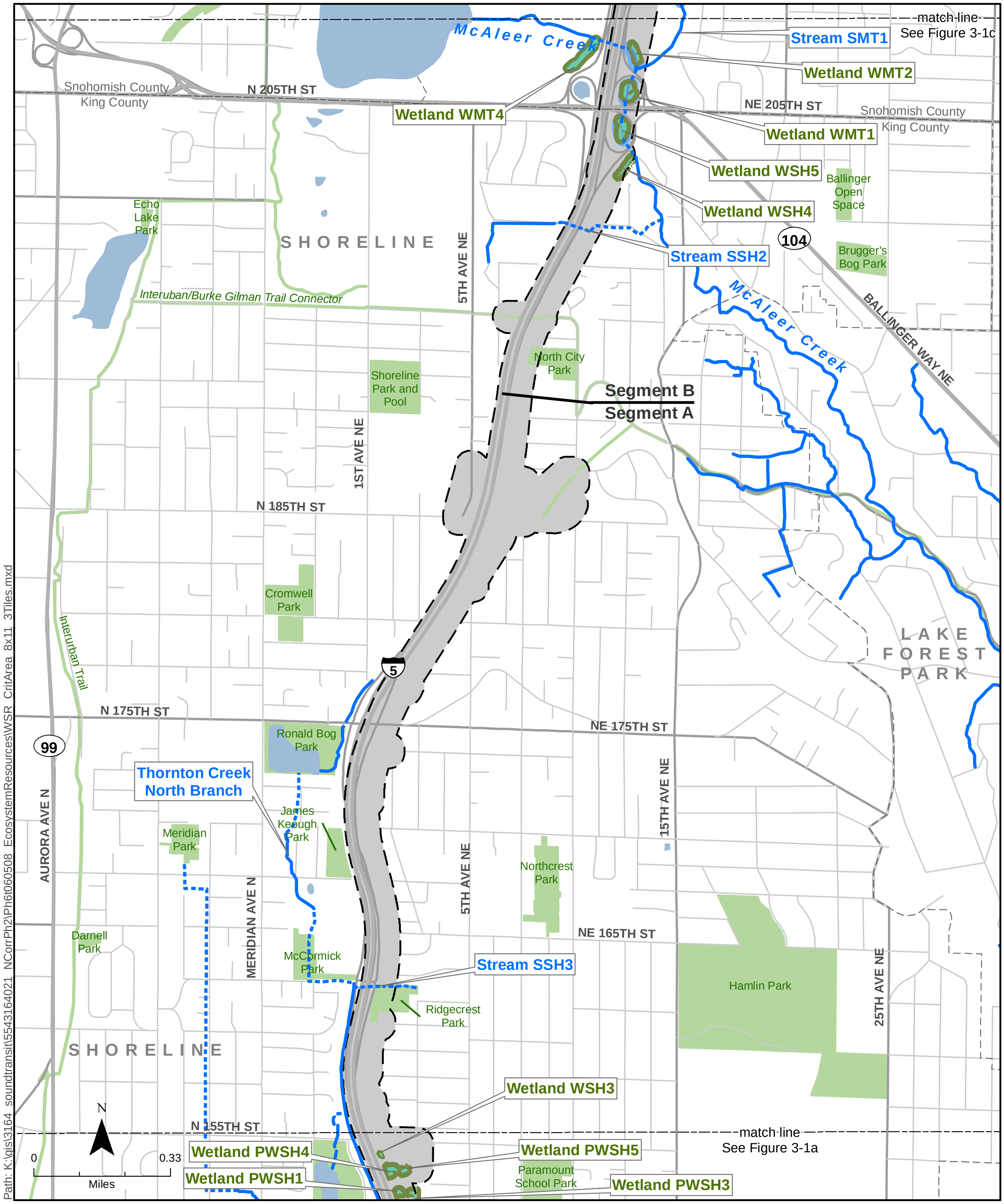
Data Sources: (King County, Snohomish County, WSDOT, Sound Transit)

Study Area
City Boundary
County Boundary
Park
Open Stream
Piped Stream
Waterbody
Stream
Stream Buffer
Wetland
Wetland Buffer

Figure 3-1a
Wetlands and Streams in Study Area

Lynnwood Link Extension

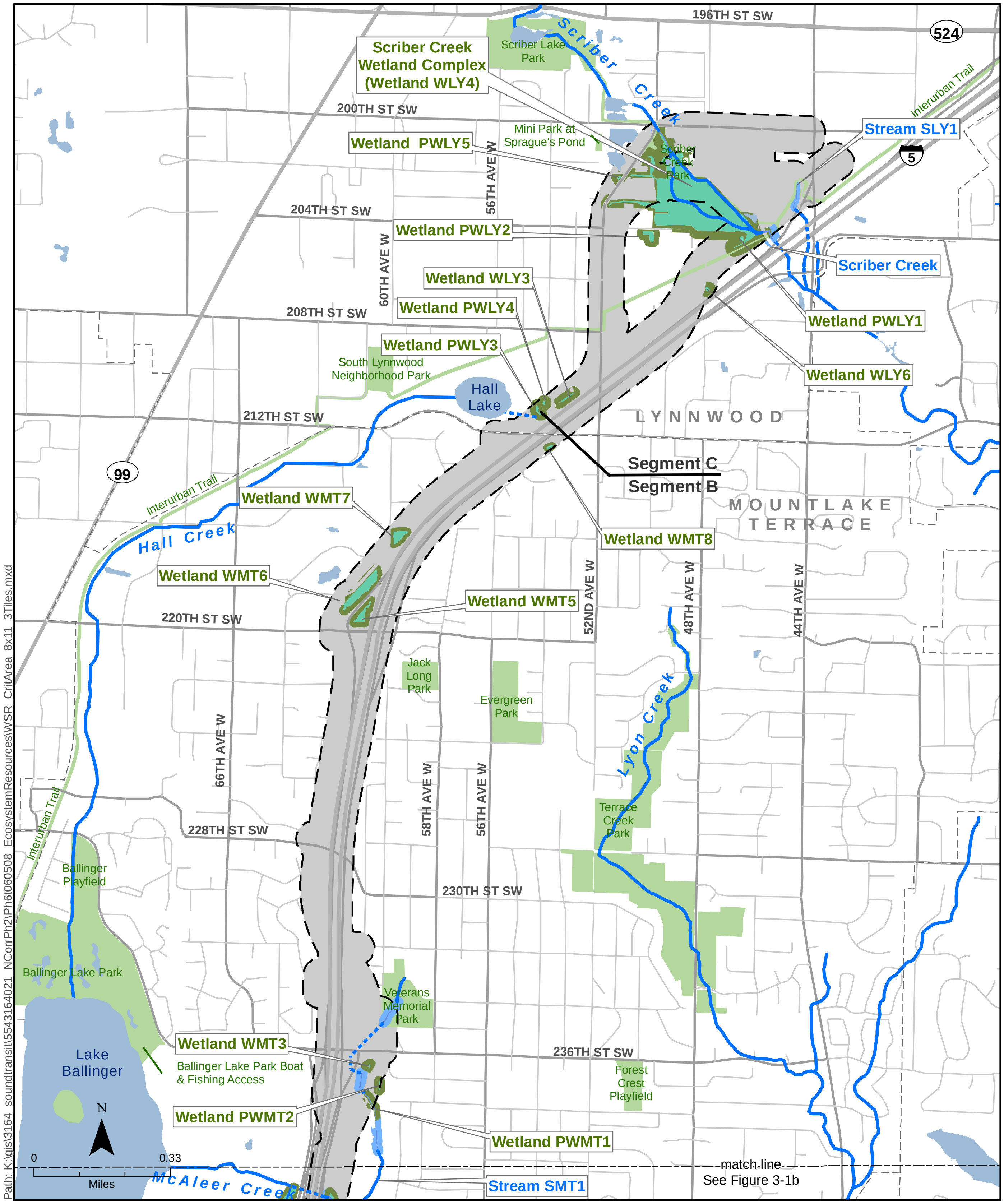
Path: K:\gis\3164_soundtransit\5543164021_NCorrPh2\Ph6\060508_EcosystemResources\WSR_CritArea_8x11_3Tiles.mxd



Data Sources: (King County, Snohomish County, WSDOT, Sound Transit)

Study Area
City Boundary
County Boundary
Park
Open Stream
Piped Stream
Waterbody
Stream
Stream Buffer
Wetland
Wetland Buffer

Figure 3-1b
Wetlands and Streams in Study Area



Data Sources: (King County, Snohomish County, WSDOT, Sound Transit)

Study Area	Open Stream	Stream
City Boundary	Piped Stream	Stream Buffer
County Boundary	Waterbody	Wetland
Park		Wetland Buffer

Figure 3-1c
Wetlands and Streams in Study Area

Lynnwood Link Extension

3.1 Seattle

Wetland WSE1[1]

Size: Approximately 0.44 acre

City of Seattle and Ecology Rating: Category III

USFWS Classification: Palustrine Forested

HGM Classification: Riverine

Sample Plots: WSE1-SP1 and WSE1-SP2

Wetland WSE1 is located in a linear depression east of the I-5 off-ramp, west of 1st Avenue NE, and south of NE 107th Street at Northgate, extending south of the field survey and study areas (see Figure 3-1a). This wetland is part of the headwaters of the South Branch of Thornton Creek (City of Seattle 2007). Wetland WSE1 was identified as Wetland A for the Northgate Link Extension (North Link) project. Sample Plot WSE1-SP1 characterizes the wetland and Sample Plot WSE1-SP2 characterizes the adjacent upland.

Wetland hydrology is supported primarily by surface water from a stormwater pond to the north (Wetland WSE2), which is conveyed via a pipe under the I-5 on- and off-ramps. Two additional pipes also convey stormwater runoff from local roadways, although no water was present in these pipes during the field investigation. Saturation at the surface was observed along the perimeter of the wetland with channelized flowing water through the center. The channel is well-defined throughout the length of the wetland continuing south out of the study area. Water from this wetland flows south, then flows in stormwater pipes under NE 100th Street to the east, ultimately into the South Branch of Thornton Creek. Water depth likely varies significantly and can change quickly.

Wetland WSE1 contains a forested community. Vegetation within the wetland is dominated by Pacific willow (*Salix lucida*), Sitka willow (*Salix sitchensis*), red-osier dogwood (*Cornus sericea*), and Himalayan blackberry (*Rubus armeniacus*). Oregon ash (*Fraxinus latifolia*), watercress (*Nasturtium officinale*), and climbing nightshade (*Solanum dulcamara*) were also observed.

Soil was examined to a depth of 26 inches and consists of two layers. The top layer is a 5-inch very dark brown (10YR 2/2) gravelly silt loam. The lower layer is a bluish-gray (10B 6/1) sand. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer surrounding Wetland WSE1 consists of roadways and steep vegetated fill slopes. The upper slopes are generally maintained grasses and disturbance-tolerant forbs. The lower slopes consists of western redcedar (*Thuja plicata*), big-leaf maple (*Acer macrophyllum),* pine (*Pinus* spp.), tall Oregon grape (*Mahonia aquifolium*), western swordfern (*Polystichum munitum*), red-osier dogwood,

[1] This wetland is in the city of Seattle within the road right-of-way (not on a publicly or privately owned parcel) and may not be subject to the City of Seattle Critical Areas Ordinance (Seattle Municipal Code 25.09).

Indian plum (*Oemleria cerasiformis),* common hawthorn (*Crataegus monogyna*), and Himalayan blackberry. Many of these native plants may have been planted.

Wetland WSE1 is classified as palustrine forested under the USFWS system, and riverine under the hydrogeomorphic (HGM) system. Wetland WSE1 is rated Category III according to the City of Seattle (Seattle MC 25.09.160.A) and Washington State Department of Ecology (Ecology). The wetland scored 40 points on Ecology's rating form (16 points for water quality, 16 points for hydrologic functions, and 8 points for habitat functions) (Appendix D). The City of Seattle requires a standard 60-foot buffer for Category III wetlands with lower levels of habitat function (Seattle MC 25.09.160.C).

Wetland WSE2[2]

Size: Approximately 0.42 acre

City of Seattle and Ecology Rating: Category IV

USFWS Classification: Palustrine Scrub-Shrub/Palustrine Aquatic Bed

HGM Classification: Depressional

Sample Plots: WSE2-SP1 and WSE2-SP2

Wetland WSE2 is currently a stormwater pond located east of the I-5 on-ramp, west of 1st Avenue NE, between NE 107th Street and North Northgate Way (see Figure 3-1a). Historically, part of this area was wetland prior to the State Route (SR) 5 Northgate Interchange Revision project (WSDOT 1993). The pond was created in wetland, therefore would be regulated as a wetland, not solely as a constructed stormwater feature. This wetland is part of the headwaters of the South Branch of Thornton Creek (City of Seattle 2007). The wetland is located entirely within the field survey area. Sample Plot WSE2-SP1 characterizes the wetland and Sample Plot WSE2-SP2 characterizes the adjacent upland.

Wetland hydrology is supported by stormwater runoff from various pipes around the wetland. Saturation at the surface was observed along the boundary with inundation throughout the majority of the wetland. Water from this wetland flows south through Wetland WSE1, then flows in stormwater pipes under NE 100th Street to the east, ultimately into the South Branch of Thornton Creek. Water depth likely varies significantly and can change rapidly.

Wetland WSE2 contains scrub-shrub and aquatic bed vegetation in the majority of the inundated area with a scrub-shrub fringe near the boundary. Vegetation within the aquatic bed community includes several unidentified species, possibly pondweed (*Potamogeton* sp.). Vegetation within the scrub-shrub community includes young black cottonwood (*Populus balsamifera*), Sitka willow, Pacific willow, red-osier dogwood, birch (*Betula* sp.), small-fruited bulrush (*Scirpus microcarpus*), softstem bulrush (*Scirpus tabernaemontani*), and common rush (*Juncus effusus*). Some broadleaf cattail (*Typha latifolia*) and reed canarygrass (*Phalaris arundinacea*) are also located along the edge of the wetland.

[2] This wetland is in the city of Seattle within the road right-of-way (not on a publicly or privately owned parcel) and may not be subject to the City of Seattle Critical Areas Ordinance (Seattle Municipal Code 25.09).

Soil was examined to a depth of 19 inches and consists of two layers. The top layer is a 16-inch dark greenish gray (10Y 4/1) and very dark gray (10YR 3/1) gravelly sandy loam. The lower layer is a dark gray (N 4/) and very dark gray (10YR 3/1) silt loam. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer surrounding Wetland WSE2 consists of roadways and steep vegetated fill slopes dominated primarily by non-native and invasive species. The majority of the buffer consists of western redcedar, Douglas fir (*Pseudotsuga menziesii*), Pacific madrone (*Arbutus menziesii*), Scotch broom (*Cytisus scoparius*), juniper (*Juniperus* sp.), pine, and Himalayan blackberry. Many of these plants appear to have been planted. The upper slopes are generally maintained grasses and disturbance-tolerant forbs.

Wetland WSE2 is classified as palustrine scrub-shrub/palustrine aquatic bed under the USFWS system, and depressional under the HGM system. Wetland WSE2 is rated a Category IV according to the City of Seattle (Seattle MC 25.09.160.A) and Ecology. The wetland scored 27 points on Ecology's rating form (6 points for water quality, 10 points for hydrologic functions, and 11 points for habitat functions) (Appendix D). The City of Seattle requires a standard 50-foot buffer for Category IV wetlands (Seattle MC 25.09.160.C).

Wetland WSE3[3]

Size: Approximately 0.21 acre

City of Seattle and Ecology Rating: Category III

USFWS Classification: Palustrine Forested/Palustrine Emergent

HGM Classification: Depressional/Slope

Sample Plots: WSE3-SP1 and WSE3-SP2

Wetland WSE3 is located east of I-5 and west of 5th Avenue NE, west of the Jackson Golf Course (see Figure 3-1a). The wetland is located entirely within the field survey area near the I-5 right-of-way fence, ranging from the lower portion of the I-5 fill slope down to the toe. Sample Plot WSE3-SP1 characterizes the wetland and Sample Plot WSE3-SP2 characterizes the adjacent upland.

Wetland hydrology is primarily supported by stormwater runoff from I-5. A concrete-lined ditch, situated along the east side of the wetland and adjacent to 5th Avenue NE, conveys water to Wetland WSE3 and provides an outlet where water is eventually piped under 5th Avenue NE to North Branch of Thornton Creek. Wetland WSE3 likely also has a high groundwater table. Small areas of inundation in micro-depressions were observed, as well as saturation of soils.

Wetland WSE3 contains forested and emergent communities. Vegetation within the forested community includes red alder (*Alnus rubra*) and salmonberry (*Rubus spectabilis*) with some reed

[3] This wetland is in the city of Seattle within road right-of-way (not on a publicly or privately owned parcel) and may not be subject to the City of Seattle Critical Areas Ordinance (Seattle Municipal Code 25.09).

canarygrass. One birch and one western redcedar were also present. Vegetation within the emergent community is dominated by reed canarygrass.

Soil was examined to a depth of 18 inches and consists of two layers. The top layer is a 10-inch black (10YR 2/1) silt loam. The lower layer is a very dark gray (10YR 3/1) gravelly sandy loam with grayish brown (10YR 5/2) gravelly sandy loam inclusions that have yellowish brown (10YR 5/8) redoximorphic features. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The vegetated buffer surrounding Wetland WSE3 consists of a relatively narrow band between the wetland and roads (I-5 and 5th Avenue NE). Maintained grasses and shrubs (primarily Himalayan blackberry) cover most of the buffer, with a forested area to the north. Species include ornamental maples (*Acer* sp.), Himalayan blackberry, Scotch broom, maintained grasses and forbs, western swordfern, and common hawthorn.

Wetland WSE3 is classified as palustrine forested/palustrine emergent under the USFWS system, and is a depressional/slope wetland under the HGM system. Wetland WSE3 is rated a Category III according to the City of Seattle (Seattle MC 25.09.160.A) and Ecology. The wetland scored 33 points on Ecology's rating form (14 points for water quality, 10 points for hydrologic functions, and 9 points for habitat functions) (Appendix D). The City of Seattle requires a standard 60-foot buffer for Category III wetlands with lower level of habitat function (Seattle MC 25.09.160.C).

Wetland WSE4[4]

Size: Approximately 0.09 acre

City of Seattle and Ecology Rating: Category III

USFWS Classification: Palustrine Forested

HGM Classification: Depressional

Sample Plots: WSE4-SP1 and WSE4-SP2

Wetland WSE4 is located in a ditch east of 5th Avenue NE and west of the Jackson Park Golf Course (see Figure 3-1a). The wetland is located entirely within the field survey area. Sample Plot WSE4-SP1 characterizes the wetland and Sample Plot WSE4-SP2 characterizes the adjacent upland.

Wetland hydrology is supported by stormwater runoff and a high groundwater table. Saturation and inundation were observed in the wetland, and drainage patterns have formed as well. The wetland drains to the North Branch of Thornton Creek.

Wetland WSE4 contains a forested community. Vegetation within the wetland includes western redcedar, Pacific willow, red alder, salmonberry, water parsley (*Oenanthe sarmentosa*), giant horsetail (*Equisetum telmateia*), and common ladyfern (*Athyrium filix-femina*). Himalayan blackberry and English ivy (*Hedera helix*) occur along the edge.

[4] This wetland is in the city of Seattle within road right-of-way (not on a publicly or privately owned parcel) and may not be subject to the City of Seattle Critical Areas Ordinance (Seattle Municipal Code 25.09).

Soil was examined to a depth of 18 inches and consists of three layers. The top layer is a 5-inch black (10YR 2/1) mucky loam. The middle layer is a dark gray (10YR 4/1) fine sandy loam with brown (10YR 4/3) redoximorphic features. The lower layer is a very dark gray (5Y 3/1) gravelly sandy loam. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer surrounding Wetland WSE4 consists of shrubs immediately adjacent to the wetland, maintained road right-of-way further to the west, a golf course to the east, and trees and shrubs to the north and south. The buffer includes salmonberry, Himalayan blackberry, laurel, and western redcedar.

Wetland WSE4 is classified as palustrine forested under the USFWS system and depressional under the HGM system. Wetland WSE4 is rated a Category III according to the City of Seattle (Seattle MC 25.09.160.A) and Ecology. The wetland scored 38 points on Ecology's rating form (14 points for water quality, 16 points for hydrologic functions, and 8 points for habitat functions) (Appendix D). The City of Seattle requires a standard 60-foot buffer for Category III wetlands with lower level of habitat function (Seattle MC 25.09.160.C).

Wetland WSE5[5]

Size: Approximately 0.16 acre

City of Seattle and Ecology Rating: Category III

USFWS Classification: Palustrine Forested

HGM Classification: Depressional

Sample Plots: WSE5-SP1 and WSE5-SP2

Wetland WSE5 is located east of I-5 and west of 5th Avenue NE, west of the Jackson Golf Course (see Figure 3-1a). The wetland crosses the I-5 right-of-way fence, ranging from the lower portion of the I-5 fill slope down to the toe. Wetland WSE5 is located entirely within the field survey area. Sample Plot WSE5-SP1 characterizes the wetland and Sample Plot WSE5-SP2 characterizes the adjacent upland.

Wetland hydrology is supported by a high groundwater table and precipitation. Saturation and inundation were observed in the wetland. No inlet was observed. The northern portion of the wetland drains to Thornton Creek.

Wetland WSE5 contains a forested community. Vegetation within the wetland includes red alder, giant horsetail, common ladyfern, reed canarygrass, common rush, small-fruited bulrush, climbing nightshade, bitter dock (*Rumex obtusifolius*), and Himalayan blackberry. A ponded area near the road contained American speedwell (*Veronica americana*), broadleaf cattail, creeping buttercup (*Ranunculus repens*), and twoheaded water-starwort (*Callitriche heterophylla*).

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[5] This wetland is in the city of Seattle within road right-of-way (not on a publicly or privately owned parcel) and may not be subject to the City of Seattle Critical Areas Ordinance (Seattle Municipal Code 25.09).

Soil was examined to a depth of 19 inches and consists of one layer. The soil is a black (10YR 2/1) gravelly sandy loam with cobbles. The soils have a high concentration of organics and partially decomposed debris throughout the profile. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer is narrow, composed of vegetated fill slopes for I-5 and 5th Avenue NE. Species include red alder, Himalayan blackberry, English ivy, English holly (*Ilex aquifolium*), Douglas fir, and maintained disturbance-tolerant grasses and forbs. There is no functioning buffer to the east (roadway).

Wetland WSE5 is classified as palustrine forested under the USFWS system and depressional under the HGM system. Wetland WSE5 is rated a Category III according to the City of Seattle (Seattle MC 25.09.160.A) and Ecology. The wetland scored 34 points on Ecology's rating form (14 points for water quality, 10 points for hydrologic functions, and 10 points for habitat functions) (Appendix D). The City of Seattle requires a standard 60-foot buffer for Category III wetlands with lower level of habitat function (Seattle MC 25.09.160.C).

Wetland WSE6[6]

Size: Approximately 0.06 acre

City of Seattle and Ecology Rating: Category III

USFWS Classification: Palustrine Scrub-Shrub

HGM Classification: Depressional

Sample Plots: WSE6-SP1

Wetland WSE6 is a shallow, linear depression located east of the northbound I-5 off-ramp for NE 145th Street and west of 5th Avenue NE, west of the Jackson Golf Course (see Figure 3-1a). The wetland is located entirely within the field survey area. Sample Plot WSE6-SP1 characterizes the wetland.

Wetland hydrology is supported by precipitation, stormwater runoff, and a high groundwater table. There are no inlets or outlets to Wetland WSE6. Small pockets of inundation in micro-depressions and saturated soils were observed.

Wetland WSE6 contains a scrub-shrub community. Vegetation within the wetland is dominated by rose spirea (*Spiraea douglasii*) and reed canarygrass. Common ladyfern, Himalayan blackberry, and one birch are also present.

Soil was examined to a depth of 18 inches and consists of two layers. The top layer is a 9-inch black (10YR 2/1) gravelly silt loam. The lower layer is a dark grayish brown (10YR 4/2) gravelly sandy loam. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

[6] This wetland is in the city of Seattle within road right-of-way (not on a publicly or privately owned parcel) and may not be subject to the City of Seattle Critical Areas Ordinance (Seattle Municipal Code 25.09).

The buffer surrounding Wetland WSE6 consists primarily of maintained disturbance-tolerant species of grasses and forbs within the I-5 right-of-way along with Himalayan blackberry and rose spirea. A small area to the south contains red alder, Douglas fir, and Himalayan blackberry. The buffers are narrow and composed of vegetation on the shoulders of I-5 and 5th Avenue NE.

Wetland WSE6 is classified as palustrine forested under the USFWS system and riverine under the HGM system. Wetland WSE6 is rated a Category III according to the City of Seattle (Seattle MC 25.09.160.A) and Ecology. The wetland scored 37 points on Ecology's rating form (12 points for water quality, 18 points for hydrologic functions, and 7 points for habitat functions) (Appendix D). The City of Seattle requires a standard 60-foot buffer for Category III wetlands with lower level of habitat function (Seattle MC 25.09.160.C).

Wetland WSE7[7]

Size: Approximately 0.14 acre

City of Seattle and Ecology Rating: Category III

USFWS Classification: Palustrine Scrub-Shrub/Palustrine Emergent

HGM Classification: Depressional

Sample Plots: WSE7-SP1 and WSE7-SP2

Wetland WSE7 is a shallow, linear depression located east of the I-5 mainline and west of a transit off-ramp, just south of NE 145th Street (see Figure 3-1a). The wetland is located entirely within the field survey area. Sample Plot WSE7-SP1 characterizes the wetland and Sample Plot WSE7-SP2 characterizes the adjacent upland.

Wetland hydrology is supported by precipitation, stormwater runoff, and a high groundwater table. There are no inlets to Wetland WSE7. A catch basin is located at the south end of the wetland providing an outlet. Areas of inundation and saturated soils were observed in the wetland.

Wetland WSE7 contains scrub-shrub and emergent communities. Vegetation within the scrub-shrub community is dominated by Himalayan blackberry with some broadleaf cattail intermixed. Vegetation within the emergent community is mostly broadleaf cattail, small-fruited bulrush, common rush, and common duckweed (*Lemna minor*). Some maintained grasses and forbs, along with reed canarygrass, are also present in the emergent community.

Soil was examined to a depth of 20 inches and consists of two layers. The top layer is a 6-inch black (10YR 2/1) silt loam. The lower layer is a black (10YR 2/1) gravelly sandy loam. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer surrounding Wetland WSE7 is mowed right-of-way dominated by disturbance-tolerant grasses and forbs. Some Himalayan blackberry is also growing within the buffer.

[7] This wetland is in the city of Seattle within road right-of-way (not on a publicly or privately owned parcel) and may not be subject to the City of Seattle Critical Areas Ordinance (Seattle Municipal Code 25.09).

Wetland WSE7 is classified as palustrine scrub-shrub/palustrine emergent under the USFWS system and depressional under the HGM system (Brinson 1993). Wetland WSE7 is rated a Category III according to the City of Seattle (Seattle MC 25.09.160.A) and Ecology. The wetland scored 37 points on Ecology's rating form (18 points for water quality, 10 points for hydrologic functions, and 9 points for habitat functions) (Appendix D). The City of Seattle requires a standard 60-foot buffer for Category III wetlands with lower level of habitat function (Seattle MC 25.09.160.C).

Wetland WSE8[8]

Size: Approximately 0.63 acre

City of Seattle and Ecology Rating: Category III

USFWS Classification: Palustrine Forested/Palustrine Scrub-Shrub

HGM Classification: Depressional

Sample Plots: WSE8-SP1

Wetland WSE8 is located east of 5th Avenue NE and west of the Jackson Park Golf Course, extending out of the field survey area to the east (see Figure 3-1a). Sample Plot WSE8-SP1 characterizes the wetland.

Wetland hydrology is supported by stormwater runoff and a high groundwater table. Saturation and inundation were observed in the wetland. Surface water flows south in a ditch within the wetland. No inlet was apparent, but the wetland drains to Thornton Creek. Flowing water, inundation, and saturated soils were observed during the site investigation.

Wetland WSE8 contains forested and scrub-shrub communities. Vegetation within the forested community is dominated by young red alder, Sitka willow, Pacific willow, salmonberry, and rose spirea. Vegetation within the scrub-shrub community is dominated by salmonberry, Himalayan blackberry, and rose spirea. Other species observed include common ladyfern, creeping buttercup, giant horsetail, and climbing nightshade.

Soil was examined to a depth of 22 inches and consists of three layers. The top layer is a 10-inch black (10YR 2/1) very mucky loam. The middle layer is a very dark gray (10YR 3/1) very mucky loam from 10 to 20 inches. The lower layer is a very dark greenish gray (10Y 3/1) gravelly sand. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer surrounding Wetland WSE8 is dominated by disturbance-tolerant species of grasses and forbs to the west within the maintained roadside and maintained grasses to the west (golf course). Unmaintained areas of the buffer consist of red alder, Himalayan blackberry, English holly, English ivy, and western swordfern.

Wetland WSE8 is classified as palustrine forested/palustrine scrub-shrub under the USFWS system, and depressional under the HGM system. Wetland WSE8 is rated a Category III according to the

[8] Portions of this wetland are in the city of Seattle within road right-of-way (not on a publicly or privately owned parcel) and may not be subject to the City of Seattle Critical Areas Ordinance (Seattle Municipal Code 25.09).

City of Seattle (Seattle MC 25.09.160.A) and Ecology. The wetland scored 41 points on Ecology's rating form (18 points for water quality, 10 points for hydrologic functions, and 13 points for habitat functions) (Appendix D). The City of Seattle requires a standard 60-foot buffer for Category III wetlands with lower level of habitat function (Seattle MC 25.09.160.C).

3.2 Shoreline

Wetland WSH1

Size: Approximately 0.06 acre

City of Shoreline Rating: Type III

Ecology Rating: Category III

USFWS Classification: Palustrine Forested/Palustrine Scrub-shrub/Palustrine Emergent

HGM Classification: Depressional/Slope

Sample Plots: WSH1-SP1 and WSH1-SP2

Wetland WSH1 is located east of I-5, north of NE 145th Street, and west of 5th Avenue NE, in a maintained area of the I-5 right-of-way (see Figure 3-1a). The western portion is a ditched swale associated with I-5 stormwater conveyance and the eastern portion is a grassy slope. This wetland is located entirely within the field survey area. Sample Plot WSH1-SP1 characterizes the wetland and Sample Plot WSH1-SP2 characterizes the adjacent upland.

Wetland hydrology is supported by a high groundwater table and stormwater runoff. The sloped portion of the wetland was saturated with drainage patterns during the site investigation, while the ditched portion was inundated with flowing water. The outlet of Wetland WSH1 is a catch basin located at the southeastern corner of the wetland. Stormwater flows through the ditched portion of the wetland, along the southern boundary.

Wetland WSH1 contains forested, scrub-shrub, and emergent communities. The forested community is dominated by one large black cottonwood and some red alders. The western portion of the wetland is a shrub community dominated by black cottonwood saplings. The emergent community is dominated by maintained grasses and forbs, including common rush, colonial bentgrass (*Agrostis capillaris*), red fescue (*Festuca rubra*), tall fescue (*Schedonorus phoenix*), small-fruited bulrush, giant horsetail, water horsetail (*Equisetum fluviatile*), creeping buttercup, American speedwell, and other rush and sedge species (*Juncus* sp. and *Carex* sp.). Common cattail and Himalayan blackberry are located around the outlet.

Soil was examined to a depth of 18 inches and consists of two layers. The top layer is an 8-inch very dark gray (10YR 3/1) silt loam. The lower layer is a dark gray (2.5Y 4/1) gravelly sandy loam with light olive brown (2.5Y 5/6) redoximorphic features. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer surrounding Wetland WSH1 consists primarily of maintained grass, especially to the northwest, but also includes Himalayan blackberry and giant horsetail. Himalayan blackberry is dominant to the east and overhangs the wetland boundary. Few trees are present in the buffer.

Wetland WSH1 is classified as palustrine forested, palustrine scrub-shrub, and palustrine emergent under the USFWS system, and depressional/slope under the HGM system. According to the City of Shoreline, Wetland WSH1 is rated a Type III (Shoreline MC 20.80.320). According to Ecology's wetland rating system, the wetland is rated a Category III based on its score. The wetland scored 34 points on Ecology's rating form (10 points for water quality, 12 points for hydrologic functions, and 12 points for habitat functions) (Appendix D). The City of Shoreline requires a standard 65-foot buffer for Type III (Shoreline MC 20.80.330).

Wetland WSH2

Size: Approximately 0.09 acre

City of Shoreline Rating: Type IV

Ecology Rating: Category IV

USFWS Classification: Palustrine Emergent

HGM Classification: Depressional/Slope

Sample Plots: WSH2-SP1 and WSH2-SP2

Wetland WSH2 is located on a gentle slope and shallow depression east of I-5, west of the highway sound wall and 3rd Avenue NE, and south of NE 152nd Street, extending east of the field survey area (see Figure 3-1a). Sample Plot WSH2-SP1 characterizes the wetland and Sample Plot WSH2-SP2 characterizes the adjacent upland.

Wetland hydrology is supported by a high ground water table and surface water from outside of the field survey area to the east, beyond the sound wall. The wetland was saturated and inundated during the site investigation. Drainage patterns were visible. Water flows to the west into a ditch along I-5.

Wetland WSH2 contains an emergent community. Vegetation within the wetland includes grasses and forbs, as well as common rush, small-fruited bulrush, reed canarygrass, and creeping buttercup. A large weeping willow (*Salix babylonica*) overhangs the sound wall.

Soil was examined to a depth of 20 inches and consists of two layers. The top layer is an 11-inch very dark brown (10YR 2/2) gravelly sandy loam with very dark brown (7.5YR 2.5/3) and dark reddish brown (5YR 3/4) redoximorphic features. The lower layer is a very dark gray (2.5Y 3/1) compacted silt loam. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer surrounding Wetland WSH2 consists primarily of maintained grasses and forbs in the I-5 right-of-way. There are some trees, including western redcedar to the east.

Wetland WSH2 is classified as palustrine emergent under the USFWS system, and depressional/slope under the HGM system. According to the City of Shoreline, Wetland WSH2 is rated a Type IV (Shoreline MC 20.80.320). According to Ecology's wetland rating system, the wetland is rated a Category IV based on its score. The wetland scored 27 points on Ecology's rating form (12 points for water quality, 10 points for hydrologic functions, and 5 points for habitat functions) (Appendix D). The City of Shoreline requires a standard 35-foot buffer for Type IV (Shoreline MC 20.80.330).

Wetland WSH3

Size: Approximately 0.03 acre

City of Shoreline Rating: Type IV

Ecology Rating: Category IV

USFWS Classification: Palustrine Emergent

HGM Classification: Slope

Sample Plots: WSH3-SP1 and WSH3-SP2

Wetland WSH3 is located east of I-5, just south of NE 155th Street, and west of the fire station (see Figure 3-1a). This wetland generally slopes east to west, located entirely within the field survey area. Sample Plot WSH3-SP1 characterizes the wetland and Sample Plot WSH3-SP2 characterizes the adjacent upland.

Wetland hydrology is primarily supported by precipitation. Surface runoff from the fire station parking lot may also contribute. The wetland drains west to a ditch within the I-5 right-of-way. Inundation and saturated soils were observed during the field investigation.

Wetland WSH3 contains an emergent community. Vegetation within the wetland is dominated by reed canarygrass, but also includes one western redcedar, some Himalayan blackberry, and giant horsetail.

Soil was examined to a depth of 19 inches and consists of two layers. The top layer is a 5-inch dark grayish brown (10YR 4/2) gravelly sandy loam. The lower layer is a dark grayish brown (10YR 4/2) gravelly sandy loam with cobbles with dark brown (7.5YR 3/4) redoximorphic features. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer surrounding Wetland WSH3 consists of a narrow slope dominated by reed canarygrass to the north and south. The buffer to the west is the I-5 fill slope, dominated by Himalayan blackberry, Douglas firs, and maintained grasses. To the east there is a narrow row of landscaping trees along the edge of the parking lot of the fire station.

Wetland WSH3 is classified as palustrine emergent under the USFWS system, and slope under the HGM system. According to the City of Shoreline, Wetland WSH3 is rated a Type IV (Shoreline MC 20.80.320). According to Ecology's wetland rating system, the wetland is rated a Category IV based on its score. The wetland scored 29 points on Ecology's rating form (16 points for water quality, 8 points for hydrologic functions, and 5 points for habitat functions) (Appendix D). The City of Shoreline requires a standard 35-foot buffer for Type IV wetlands (Shoreline MC 20.80.330).

Wetland WSH4

Size: Approximately 0.11 acre

City of Shoreline Rating: Type III

Ecology Rating: Category III

USFWS Classification: Palustrine Forested/Palustrine Emergent

HGM Classification: Depressional/Slope

Sample Plots: WSH4-SP1 and WSH4-SP2

Wetland WSH4 is located east of the I-5 off-ramp to SR 104 and west of Forest Park Drive NE, extending northeast of the field survey and study areas (see Figure 3-1b). This linear wetland is near the I-5 right-of-way fence, ranging from the lower portion of the I-5 fill slope down to the toe. Sample Plot WSH4-SP1 characterizes the wetland and Sample Plot WSH4-SP2 characterizes the adjacent upland.

Wetland hydrology is supported by a high ground water table and seeps. The seeps are located along the northwest boundary of the wetland. No specific inlet was observed in the wetland. Water flows to the northeast in a swale at the edge of the I-5 right-of-way, draining to McAleer Creek. Inundation and saturated soils were observed during the field investigation.

Wetland WSH4 contains forested and emergent communities. Vegetation within the forested community includes red alder, salmonberry, reed canarygrass, common ladyfern, fowl mannagrass (*Glyceria striata*), creeping buttercup, Himalayan blackberry, and giant horsetail. The vegetation within the emergent community includes giant horsetail, common ladyfern, Himalayan blackberry, American speedwell, common duckweed, and twoheaded water-starwort.

Soil was examined to a depth of 20 inches and consists of two layers. The top layer is a 4-inch black (10YR 2/1) silt loam with organics. The lower layer is a very dark brown (10YR 2/2) sand. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer on the slope, north and west of Wetland WSH4 consists of Douglas fir, Himalayan blackberry, and Indian plum. The buffer consists of maintained residential yards, roads, and driveways to the south and east.

Wetland WSH4 is classified as palustrine forested and palustrine emergent under the USFWS system, and depressional/slope under the HGM system. According to the City of Shoreline, Wetland WSH4 is rated a Type III (Shoreline MC 20.80.320). According to Ecology's wetland rating system, the wetland is rated a Category III based on its score. The wetland scored 34 points on Ecology's rating form (14 points for water quality, 10 points for hydrologic functions, and 10 points for habitat functions) (Appendix D). The City of Shoreline requires a standard 65-foot buffer for Type III wetlands (Shoreline MC 20.80.330).

Wetland WSH5

Size: Approximately 0.37 acre

City of Shoreline Rating: Type III

Ecology Rating: Category III

USFWS Classification: Palustrine Forested

HGM Classification: Depressional

Sample Plots: WSH5-SP1 and WSH5-SP2

Wetland WSH5 is in a deep depression associated with McAleer Creek, surrounded by roadway fill slopes. It is located entirely within the field survey area east of I-5 inside the northbound on-ramp cloverleaf south of SR 104 (see Figure 3-1b). Sample Plot WSH5-SP1 characterizes the wetland and Sample Plot WSH5-SP2 characterizes the adjacent upland. .

Wetland hydrology is supported by McAleer Creek, stormwater drainages, and a shallow groundwater table. Seeps and drainage patterns were also observed along the slopes of the wetland. The primary inlet and outlet are large culverts associated with McAleer Creek. Both the wetland and stream drain to the south.

Wetland WSH5 contains a forested community. Vegetation within the wetland includes red alder, black cottonwood, birch, rose spirea, Scouler's willow (*Salix scouleriana*), salmonberry, reed canarygrass, small-fruited bulrush, giant horsetail, creeping buttercup, common ladyfern, and fringed willowherb (*Epilobium ciliatum*).

Soil was examined to a depth of 19 inches and consists of two layers. The top layer is a 10-inch very dark grayish brown (10YR 3/2) sandy loam. The lower layer is a very dark gray (2.5Y 3/1) gravelly sand with dark yellowish brown (10YR 3/6) redoximorphic features. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer surrounding Wetland WSH5 consists of coniferous and deciduous trees. Species include Douglas fir, black cottonwood, red alder, western redcedar, and ornamental cherry (*Prunus* sp.) Understory vegetation consists of Himalayan blackberry, rose spirea, Indian plum, English holly, trailing blackberry (*Rubus ursinus*), western swordfern, giant horsetail, and English ivy. Additionally, a narrow band of maintained herbaceous vegetation is located near the roadways.

Wetland WSH5 is classified as palustrine forested under the USFWS system, and depressional under the HGM system. According to the City of Shoreline, Wetland WSH5 is rated a Type III (Shoreline MC 20.80.320). According to Ecology's wetland rating system, the wetland is rated a Category III based on its score. The wetland scored 30 points on Ecology's rating form (12 points for water quality, 6 points for hydrologic functions, and 12 points for habitat functions) (Appendix D). The City of Shoreline requires a standard 65-foot buffer for Type III wetlands (Shoreline MC 20.80.330).

3.3 Mountlake Terrace

Wetland WMT1

Size: Approximately 0.29 acre

City of Mountlake Terrace and Ecology Rating: Category III

USFWS Classification: Palustrine Forested

HGM Classification: Depressional

Sample Plots: WMT1-SP1 and WMT1-SP2

Wetland WMT1 is in a deep depression associated with McAleer Creek surrounded by roadway fill slopes. It is located entirely within the field survey area east of I-5 inside of the cloverleaf northbound off-ramp, north of SR 104 (see Figure 3-1b). Sample Plot WMT1-SP1 characterizes the wetland and Sample Plot WMT1-SP2 characterizes the adjacent upland.

Wetland hydrology is supported by McAleer Creek, stormwater runoff, shallow groundwater table, and seeps. Saturation at the surface was commonly observed throughout the wetland, especially near the base of slopes. The wetland also contains inundated micro-depressions and drainage channels. Large amounts of stormwater were observed flowing from a pipe southwest of the wetland, down a rock-lined channel to Wetland WMT1 and McAleer Creek. The primary inlet and outlet are large culverts associated with McAleer Creek. The stream channel is well-defined throughout most of the wetland. The wetland drains to McAleer Creek, which flows to the south (to Wetland SH5).

Wetland WMT1 contains a forested community dominated by red alder, black cottonwood, salmonberry, Himalayan blackberry, twinberry honeysuckle (*Lonicera involucrata*), rose spirea, common ladyfern, giant horsetail, and creeping buttercup. Other species observed include birch, western hemlock (*Tsuga heterophylla*), English holly, Indian plum, pale yellow iris (*Iris pseudacorus*), reed canarygrass, largeleaf avens (*Geum macrophyllum*), fringed willowherb, climbing nightshade, and western swordfern.

Soil was examined to a depth of 18 inches and consists of three layers. The top layer is a 5-inch very dark grayish brown (10YR 3/2) silt loam. The middle layer is a 4-inch dark gray (10YR 4/1) gravelly sandy loam with dark yellowish brown (10YR 4/6) redoximorphic features. The lower layer is a dark gray (10YR 4/1) very sandy loam with dark yellowish brown (10YR 4/6) redoximorphic features. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer surrounding Wetland WMT1 consists of coniferous and deciduous trees. Species include Douglas fir, black cottonwood, red alder, birch, and bitter cherry (*Prunus emarginata*). Understory vegetation consists of Himalayan blackberry, rose spirea, Indian plum, English holly, western swordfern, and giant horsetail. Additionally, a narrow band of maintained herbaceous vegetation is located near the roadways.

Wetland WMT1 is classified as palustrine forested under the USFWS system, and depressional under the HGM system. Wetland WMT1 is rated a Category III according to the City of Mountlake Terrace (Mountlake Terrace MC 16.15.080) and Ecology. The wetland scored 30 points on Ecology's rating form (12 points for water quality, 6 points for hydrologic functions, and 12 points for habitat functions) (Appendix D). The City of Mountlake Terrace requires a standard 65-foot buffer for Category III (Mountlake Terrace MC 16.15.090).

Wetland WMT2

Size: Approximately 0.17 acre

City of Mountlake Terrace and Ecology Rating: Category III

USFWS Classification: Palustrine Forested

HGM Classification: Riverine/Slope

Sample Plots: WMT2-SP1 and WMT2-SP2

Wetland WMT2 is located east of I-5, northeast of the northbound I-5 on-ramp from SR 104 and southeast of Gateway Place (see Figure 3-1b). This wetland is on a steep slope extending down to McAleer Creek, located entirely within the field survey area. Sample Plot WMT2-SP1 characterizes the wetland and Sample Plot WMT2-SP2 characterizes the adjacent upland.

Wetland hydrology is supported by McAleer Creek and seeps. Areas of saturation and inundation were observed in the wetland. The stream channel is well-defined throughout most of the wetland. McAleer Creek flows from the northwest (from the Nile Shrine Golf Course west of I-5) to the south in a pipe under the northbound I-5 on-ramp.

Wetland WMT2 contains a forested community. Vegetation on the slope consists of black cottonwood, red alder, Himalayan blackberry, trailing blackberry, and scouring rush (*Equisetum hyemale*). Vegetation in and adjacent to McAleer Creek includes black cottonwood, salmonberry, Himalayan blackberry, pale yellow iris, creeping buttercup, reed canarygrass, and giant horsetail.

Soil was examined to a depth of 12 inches and consists of two layers. The top layer is a 6-inch very dark grayish brown (10YR 3/2) sandy loam. The lower layer is a dark grayish brown (2.5Y 4/2) gravelly sandy loam. There is an extremely compacted restrictive layer at 12 inches. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer surrounding Wetland WMT2 consists generally of steep vegetated slopes. Species include Douglas fir, red alder, bitter cherry, Himalayan blackberry, trailing blackberry, and western swordfern.

Wetland WMT2 is classified as palustrine forested under the USFWS system, and riverine/slope under the HGM system. Wetland WMT2 is rated a Category III according to the City of Mountlake Terrace (Mountlake Terrace MC 16.15.080) and Ecology. The wetland scored 43 points on Ecology's rating form (16 points for water quality, 16 points for hydrologic functions, and 11 points for habitat functions) (Appendix D). The City of Mountlake Terrace requires a standard 65-foot buffer for Category III (Mountlake Terrace MC 16.15.090).

Wetland WMT3

Size: Approximately 0.01 acre

City of Mountlake Terrace and Ecology Rating: Category III

USFWS Classification: Palustrine Forested

HGM Classification: Depressional

Sample Plots: WMT3-SP1 and WMT3-SP2

Wetland WMT3 is in a small, shallow depression east of I-5, east of the northbound I-5 off-ramp, west of 237th Street SW, and south of 236th Street SW (see Figure 3-1c). The wetland is located entirely within the field survey area. Sample Plot WMT3-SP1 characterizes the wetland and Sample Plot WMT3-SP2 characterizes the adjacent upland.

Wetland hydrology is supported by a high ground water table. Soil saturation was observed at 13 inches below the surface and water-stained leaves were present. There may also be some periods of inundation. It is a closed depression and therefore has no inlet or outlet.

Wetland WMT3 has a forested community consisting of red alder, western redcedar, salmonberry, common ladyfern, western skunk cabbage (*Lysichiton americanus*), and giant horsetail. A single bitter cherry tree, a single western hemlock tree, western swordfern, and salal (*Gaultheria shallon*) are growing in hummocks.

Soil was examined to a depth of 18 inches and consists of two layers. The top layer is an 11-inch very dark gray (10YR 3/1) silt loam. The lower layer is a black (10YR 2/1) silt loam. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer surrounding Wetland WMT3 consists of a mixed forest. Species include bitter cherry, red alder, western redcedar, Douglas fir on the upper slopes, western hemlock, Himalayan blackberry, Indian plum, salmonberry, cherry laurel (*Prunus laurocerasus*), red elderberry (*Sambucus racemosa*), giant horsetail, and English ivy.

Wetland WMT3 is classified as palustrine forested under the USFWS system, and is depressional under the HGM system. Wetland WMT3 is rated a Category III according to the City of Mountlake Terrace (Mountlake Terrace MC 16.15.080) and Ecology. The wetland scored 39 points on Ecology's rating form (16 points for water quality, 14 points for hydrologic functions, and 9 points for habitat functions) (Appendix D). The City of Mountlake Terrace requires a standard 65-foot buffer for Category III (Mountlake Terrace MC 16.15.090).

Wetland WMT4

Size: Approximately 0.43 acre

City of Mountlake Terrace and Ecology Rating: Category III

USFWS Classification: Palustrine Forested/Palustrine Scrub-shrub

HGM Classification: Depressional/Slope

Sample Plots: WMT4-SP1 and WMT4-SP2

Wetland WMT4 is located in a depression west of I-5 and west of the southbound I-5 off-ramp to SR 104. The wetland extends west of the study area onto the Nile Shrine Golf Course and is approximately 0.43 acre (see Figure 3-1b). Sample Plot WMT4-SP1 characterizes the wetland and Sample Plot WMT4-SP2 characterizes the adjacent upland.

Wetland hydrology is supported by a high groundwater table, and potentially stormwater runoff from I-5. The wetland drains north to McAleer Creek. Drainage patterns were observed and water was flowing during the site investigation. The wetland is seasonally inundated and saturated.

Wetland WMT4 contains forested and scrub-shrub communities. Vegetation within the wetland is dominated by red alder, salmonberry, common ladyfern, and Himalayan blackberry. Other species present include twinberry honeysuckle, reed canarygrass, western swordfern, giant horsetail, water horsetail, and false lily of the valley (*Maianthemum dilatatum*).

Soil was examined to a depth of 18 inches and consists of three layers. The top layer is a 5-inch very dark brown (10YR 2/2) loam. The middle layer is an 11-inch very dark gray (10YR 3/1) gravelly sand. The lower layer is a very dark gray (5Y 3/1) and dark greenish gray (10GY 4/1) very sandy loam. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer surrounding Wetland WMT4 consists of narrow areas of forest to the east and west of the wetland. A large retaining wall disrupts the buffer to the east and a golf course is located to the west. The golf course beyond the forested strip to the west is maintained grasses. The forested buffer consists of red alder, western redcedar, salmonberry, Indian plum, Himalayan blackberry, English holly, English ivy, and giant horsetail.

Wetland WMT4 is classified as palustrine forested under USFWS system, and depressional under the HGM system. Wetland WMT4 is rated a Category III according to the City of Mountlake Terrace (Mountlake Terrace MC 16.15.080) and Ecology. The wetland scored 34 points on Ecology's rating form (16 points for water quality, 6 points for hydrologic functions, and 12 points for habitat functions) (Appendix D). The City of Mountlake Terrace requires a standard 65-foot buffer for Category III (Mountlake Terrace MC 16.15.090).

Wetland WMT5

Size: Approximately 0.36 acre

City of Mountlake Terrace and Ecology Rating: Category III

USFWS Classification: Palustrine Forested/Palustrine Emergent

HGM Classification: Depressional

Sample Plots: WMT5-SP1 and WMT5-SP2

Wetland WMT5 is located in a shallow depression west of I-5, east of the southbound I-5 off-ramp to 220th Street SW, and north of 220th Street SW (see Figure 3-1c). The wetland is located entirely within the field survey area. Sample Plot WMT5-SP1 characterizes the wetland and Sample Plot WMT5-SP2 characterizes the adjacent upland.

Wetland hydrology is supported by a high groundwater table and stormwater runoff. Saturation at the surface was observed along the perimeter of the wetland with pockets of inundation through the center of the wetland. The wetland drains to a catch basin located in the northern portion of the wetland.

Wetland WMT5 contains a forested community and an emergent community. The forested community is dominated by red alder, black cottonwood, quaking aspen (*Populus tremuloides*), twinberry honeysuckle, red-osier dogwood, and Sitka willow; whereas, the emergent community is dominated by reed canarygrass. Other species observed include birch, climbing nightshade, common rush, and fringed willowherb.

Soil was examined to a depth of 18 inches and consists of three layers. The top layer is a 4-inch very dark grayish brown (10YR 3/2) sandy loam. The middle layer is a 3-inch dark greenish gray (10Y 4/1) clay loam. The lower layer is a greenish gray (10Y 5/1) gravelly sandy loam. The two lower layers are very compacted. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer surrounding Wetland WMT5 consists of steep vegetated slopes and maintained road shoulders. The upper slopes, near the roadways, are generally maintained grasses and disturbance-tolerant forbs. The lower portion of the buffer consists of red alder, Douglas fir, black cottonwood, Himalayan blackberry, snowberry (*Symphoricarpos*), twinberry honeysuckle, western redcedar, and forsythia (*Forsythia suspensa*).

Wetland WMT5 is classified as palustrine forested under the USFWS system, and depressional under the HGM system. Wetland WMT5 is rated a Category III according to the City of Mountlake Terrace (Mountlake Terrace MC 16.15.080) and Ecology. The wetland scored 30 points on Ecology's rating form (14 points for water quality, 7 points for hydrologic functions, and 9 points for habitat functions) (Appendix D). The City of Mountlake Terrace requires a standard 65-foot buffer for Category III (Mountlake Terrace MC 16.15.090).

Wetland WMT6

Size: Approximately 1.24 acres

City of Mountlake Terrace and Ecology Rating: Category III

USFWS Classification: Palustrine Forested

HGM Classification: Depressional

Sample Plots: WMT6-SP1 and WMT6-SP2

Wetland WMT6 is located on a slope and depression northeast of Mountlake Terrace City Hall. It is located west of I-5, southeast of 60th Avenue West, and west of the southbound I-5 off-ramp to 220th Street SW (see Figure 3-1c). The wetland is located entirely within the field survey area. Sample Plot WMT6-SP1 characterizes the wetland and Sample Plot WMT6-SP2 characterizes the adjacent upland.

Wetland hydrology is supported by groundwater. Pockets of saturation and inundation were irregularly located throughout the wetland. The wetland has hummocks and micro-depressions as well as a slope. The groundwater was expressing in the lower portions of the slope and draining to a catch basin in a ditch northwest of the wetland.

Wetland WMT6 contains a forested community. Vegetation within the wetland includes red alder, Pacific willow, black cottonwood, salmonberry, Himalayan blackberry, red-osier dogwood, giant horsetail, small-fruited bulrush, western skunk cabbage, spreading woodfern (*Dryopteris expansa*), and common ladyfern. Creeping buttercup, watercress, and American speedwell are dominant outside the right-of-way fence along 60th Avenue West.

Soil was examined to a depth of 18 inches and consists of two layers. The top layer is a 7-inch black (10YR 2/1) silt loam. The lower layer is a greenish gray (10G 5/1) gravelly sandy loam. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer surrounding Wetland WMT6 consists of forested areas and maintained lawn. The buffer to the southeast on the I-5 prism slope consists of Douglas fir, big-leaf maple, Himalayan blackberry, Indian plum, and giant horsetail. The buffer near City Hall and I-5 are generally maintained grasses and disturbance-tolerant forbs with some landscaped trees.

Wetland WMT6 is classified as palustrine forested under the USFWS system, and depressional under HGM system. Wetland WMT6 is rated a Category III according to the City of Mountlake Terrace (Mountlake Terrace MC 16.15.080) and Ecology. The wetland scored 30 points on Ecology's rating form (14 points for water quality, 7 points for hydrologic functions, and 9 points for habitat functions) (Appendix D). The City of Mountlake Terrace requires a standard 65-foot buffer for Category III (Mountlake Terrace MC 16.15.090).

Wetland WMT7

Size: Approximately 0.41 acre

City of Mountlake Terrace and Ecology Rating: Category IV

USFWS Classification: Palustrine Forested

HGM Classification: Depressional

Sample Plots: WMT7-SP1 and WMT7-SP2

Wetland WMT7 is a relatively flat depression west of the I-5 fill slope, east of 60th Avenue West, and northeast of Wetland WMT6 (see Figure 3-1c). The wetland extends outside of the field survey and study areas. Sample Plot WMT7-SP1 characterizes the wetland and Sample Plot WMT7-SP2 characterizes the adjacent upland.

Wetland hydrology is supported by a high groundwater table. The predominant hydrologic regime is saturated soils and the outlet of the wetland is located on the west side of the wetland outside of the field survey and study areas. It appears to drain into a culvert that flows to the northwest under 60th Avenue West.

Wetland WMT7 contains a forested community. Vegetation within the wetland includes red alder, Sitka willow, Pacific willow, salmonberry, Himalayan blackberry, and twinberry honeysuckle.

Soil was examined to a depth of 26 inches and consists of three layers. The top layer is a 10-inch black (10YR 2/1) organic layer. The middle layer is a 7-inch very dark brown (10YR 2/2) organic layer. The lower layer is a very dark gray (10YR 3/1) silt loam with organic matter inclusions. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer to the north, west, and south of Wetland WMT7 consists of red alder, western redcedar, and salmonberry. There is a narrow forested area on the steep slope of the I-5 road prism to the east that consists of big-leaf maple, European mountain ash (*Sorbus aucuparia*), Douglas fir, Himalayan blackberry, Indian plum, and western swordfern. A narrow band of generally maintained grasses and disturbance-tolerant forbs is located immediately adjacent to I-5.

Wetland WMT7 is classified as palustrine forested under the USFWS system, and depressional under the HGM system (Brinson 1993). Wetland WMT7 is rated a Category IV according to the City of Mountlake Terrace (Mountlake Terrace MC 16.15.080) and Ecology. The wetland scored 27 points on Ecology's rating form (12 points for water quality, 7 points for hydrologic functions, and 8 points for habitat functions) (Appendix D). The City of Mountlake Terrace requires a standard 50-foot buffer for Category (Mountlake Terrace MC 16.15.090).

Wetland WMT8

Size: Approximately 0.01 acre

City of Mountlake Terrace and Ecology Rating: Category IV

USFWS Classification: Palustrine Forested

HGM Classification: Slope

Sample Plots: WMT8-SP1 and WMT8-SP2

Wetland WMT8 is located in a swale southeast of I-5, northwest of an apartment complex, and south of 212th Street SW (see Figure 3-1c). The wetland is located entirely within the field survey area. Sample Plot WMT8-SP1 characterizes the wetland and Sample Plot WMT8-SP2 characterizes the adjacent upland.

Wetland hydrology is supported by a high groundwater table. No inlet or outlet was observed in the wetland. Water was flowing slowly from the south to the north during the site investigation. Inundation, saturation, water-stained leaves, and algae were all observed in the wetland. The water likely goes subsurface and drains to a nearby stormwater drainage.

Wetland WMT8 contains a forested community. Vegetation within the wetland includes salmonberry, common ladyfern, western skunk cabbage, Himalayan blackberry, piggy-back-plant (*Tolmiea menziesii*), giant horsetail, and English ivy. Red alder is growing along the edge, overhanging the wetland.

Soil was examined to a depth of 19 inches and consists of three layers. The top layer is a 5-inch very dark gray (10YR 3/1) loam. The middle layer is a dark gray (5Y 4/1) gravelly sandy loam with olive brown (2.5Y 4/3) redoximorphic features from 5 to 9 inches. The lower layer is a dark greenish gray (10Y 4/1) gravelly sandy loam with dark yellowish brown (10YR 3/4) redoximorphic features. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer surrounding Wetland WMT8 is forested and consists of red alder, Douglas fir, big-leaf maple, European mountain ash, western redcedar, Himalayan blackberry, Indian plum, salmonberry, English ivy, and western swordfern.

Wetland WMT8 is classified as palustrine forested under USFWS system, and depressional under the HGM system. Wetland WMT8 is rated a Category IV according to the City of Mountlake Terrace (Mountlake Terrace MC 16.15.080) and Ecology. The wetland scored 15 points on Ecology's rating form (4 points for water quality, 3 points for hydrologic functions, and 8 points for habitat functions) (Appendix D). The City of Mountlake Terrace requires a standard 50-foot buffer for Category IV (Mountlake Terrace MC 16.15.090).

3.4 Lynnwood

Wetland WLY3

Size: Approximately 0.08 acre

City of Lynnwood and Ecology Rating: Category III

USFWS Classification: Palustrine Scrub-shrub

HGM Classification: Depressional

Sample Plots: WLY3-SP1 and WLY3-SP2

Wetland WLY3 is in a linear depression northwest of I-5 and south of the end of 53rd Avenue West (see Figure 3-1c). The wetland is located entirely within the field survey area. Sample Plot WLY3-SP1 characterizes the wetland and Sample Plot WLY3-SP2 characterizes the adjacent upland.

Wetland hydrology is supported by surface water from a culvert under 52nd Avenue and a high groundwater table. Saturation at the surface was observed along the perimeter of the wetland with flowing water through the center of the wetland. A well-defined, ditched channel is present through some of the wetland. The wetland drains to a lifted culvert located near the southwest end of the wetland.

Wetland WLY3 contains a scrub-shrub community. Vegetation within the wetland is dominated by rose spirea with some Himalayan blackberry.

Soil was examined to a depth of 20 inches and consists of one layer. The soil is a black (10YR 2/1) silt loam. High levels of organic content were observed in the soil. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer surrounding Wetland WLY3 consists of steep forested slopes to the southeast and disturbed residential properties to the northwest. Vegetation in the buffers consists of Douglas fir, big-leaf maple, Indian plum, and western swordfern.

Wetland WLY3 is classified as palustrine scrub-shrub under the USFWS system, and depressional under the HGM system. Wetland WLY3 is rated a Category III according to the City of Lynnwood (Lynnwood MC 17.10.050) and Ecology. The wetland scored 35 points on Ecology’s rating form (18 points for water quality, 8 points for hydrologic functions, and 9 points for habitat functions) (Appendix D). The City of Lynnwood requires a standard 75-foot buffer for Category III wetlands (Lynnwood MC 17.10.051).

Wetland WLY4

Size: Approximately 17.00 acres

City of Lynnwood and Ecology Rating: Category II

USFWS Classification: Palustrine Forested/Palustrine Scrub-shrub/Palustrine Emergent

HGM Classification: Riverine/Depressional

Sample Plots: WLY4-SP1 and WLY4-SP2

Wetland WLY4 is a large wetland/stream complex associated with Scriber Creek, located southeast of Cedar Valley Road, northeast of 204th Street SW, and southwest of the Lynnwood Transit Center (see Figure 3-1c). The wetland extends outside of the field survey and study areas. Sample Plot WLY4-SP1 characterizes the wetland and Sample Plot WLY4-SP2 characterizes the adjacent upland.

Wetland hydrology is supported primarily by Scriber Creek, which enters the wetland from the north. A high groundwater table and stormwater runoff likely contribute to the hydrology as well. Saturation of soils, inundation, a permanently flowing stream, and open water ponds were observed in areas of Wetland WLY4. The channel of Scriber Creek is well-defined near the northern and southern boundaries, becoming less-defined in between. The wetland and Scriber Creek drain southeast, out of the study area.

Wetland WLY4 contains forested, scrub-shrub, and emergent communities. The forested areas are dominated by black cottonwood, Pacific willow, and reed canarygrass, with lesser amounts of western redcedar, Sitka spruce, and salmonberry. The shrub community consists primarily of rose spirea, red-osier dogwood, twinberry honeysuckle, and Sitka willow. Indian plum, western skunk cabbage, and water parsley are also present. Reed canarygrass dominates the emergent community. The southern portion of the wetland adjacent to the Interurban Trail is actively maintained.

Soil was examined to a depth of 20 inches and consists of one layer. The soil is a black (10YR 2/1) mucky silt. High levels of organic content in various stages of decomposition were observed in the soil. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer surrounding Wetland WLY4 is generally very narrow, often forested. The wetland is in an urban setting and much of the buffer is a narrow line of trees located between the wetland and developed areas, such as parking lots, trails, or residential and commercial structures. Vegetation includes Douglas fir, western redcedar, red alder, black cottonwood, Himalayan blackberry, red-osier dogwood, English holly, Portugal laurel (*Prunus lusitanica*), western swordfern, English ivy, maintained grasses, and other disturbance-tolerant species. Plantings, a split rail fence, and Native Growth Protection Area (NGPA) signs were observed in the vicinity of the private property to the south along the wetland edge.

Wetland WLY4 is classified as palustrine forested/palustrine scrub-shrub/palustrine emergent under the USFWS system, and riverine/depressional under the HGM system. Wetland WLY4 is rated a Category II according to the City of Lynnwood (Lynnwood MC 17.10.050) and Ecology. The wetland scored 67 points on Ecology's rating form (26 points for water quality, 20 points for hydrologic functions, and 21 points for habitat functions) (Appendix D). The City of Lynnwood requires a standard 110-foot buffer for Category II wetlands (Lynnwood MC 17.10.051).

Wetland WLY6

Size: Approximately 0.05 acre

City of Lynnwood and Ecology Rating: Category III

USFWS Classification: Palustrine Forested

HGM Classification: Depressional

Sample Plots: WLY6-SP1 and WLY6-SP2

Wetland WLY6 is located in a depression northwest of I-5 and northeast of 208th Street SW (see Figure 3-1c). The wetland is located entirely within the field survey area. Sample Plot WLY6-SP1 characterizes the wetland and Sample Plot WLY6-SP2 characterizes the adjacent upland.

Wetland hydrology is supported by stormwater runoff from under 208th Street SW and a high groundwater table. Wetland WLY6 likely has a seasonal flooded and seasonal saturated hydroperiods. Wetland hydrology indicators observed include small pockets of inundation and soil saturation. No inlet or outlet was located during the field investigation.

Wetland WLY6 contains a forested community dominated by Pacific willow and twinberry honeysuckle. Other vegetation within the wetland includes red alder, Himalayan blackberry, sedge, common ladyfern, and reed canarygrass.

Soil was examined to a depth of 18 inches and consists of three layers. The top layer is a 4-inch very dark gray (10YR 3/1) silt loam with yellowish red (5YR 4/6) redoximorphic features. The middle layer is a 5-inch dark gray (5Y 4/1) clay loam with strong brown (7.5YR 4/6) redoximorphic features. The lower layer is a dark gray (5Y 4/1) clay loam with fewer strong brown (7.5YR 4/6) redoximorphic features. Soils in the wetland are not mapped by the NRCS (identified as Urban land).

The buffer surrounding Wetland WLY6 to the west is narrow, consisting of disturbance-tolerant grasses and forbs associated with the maintained right-of-way for 208th Street SW. The buffer to the north is dominated by black cottonwood and Himalayan blackberry with a few red elderberry and one Douglas fir, extending into a fallow field. The buffer to the south and east contains a gravel access road and is vegetated primarily with Himalayan blackberry and Scotch broom with a few trees and some grasses. Much of the buffer is disturbed by a gravel access road and 208th Street SW.

Wetland WLY6 is classified as palustrine forested under USFWS system, and depressional under the HGM system. Wetland WLY6 is rated a Category III according to the City of Lynnwood (Lynnwood MC 17.10.050) and Ecology. The wetland scored 39 points on Ecology's rating form (24 points for water quality, 7 points for hydrologic functions, and 8 points for habitat functions) (Appendix D). The City of Lynnwood requires a standard 75-foot buffer for Category III wetlands (Lynnwood MC 17.10.051).

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APPENDIX A

Wetland Field Reconnaissance Dates

Wetlands	Date of Field Investigation	Location
WSE1	3/9/12	I-5 ROW, west of 1st Avenue NE & south of on & off ramps
WSE2	3/12/12	I-5 ROW, west of 1st Avenue NE & south of Northgate Way
WSE3	3/14/12	I-5 ROW, between I-5 and 5th Avenue NE
WSE4	3/14/12	Between 5th Avenue NE and Jackson Park Golf Course
WSE5	3/19/12	I-5 ROW, between I-5 and 5th Avenue NE
WSE6	3/19/12	I-5 ROW, between I-5 off-ramp and 5th Avenue NE
WSE7	3/19/12	I-5 ROW, between I-5 and Transit off-ramp
WSE8	3/21/12	Between 5th Avenue NE and Jackson Park Golf Course
WSH1	3/15/12	I-5 ROW, west of 5th Avenue NE and north of NE 145th Street
WSH2	3/15/12	I-5 ROW and extending east, west of 3rd Avenue NE
WSH3	3/15/12	I-5 ROW, south of NE 155th Street, west of fire station
WSH4	3/21/12	I-5 ROW, east of I-5 off ramp to SR 104
WSH5	3/21/12	I-5 ROW, in cloverleaf south of SR 104
WMT1	3/27/12	I-5 ROW, in cloverleaf north of SR 104
WMT2	3/27/12	I-5 ROW, east of I-5 on ramp from SR 104
WMT3	3/28/12	I-5 ROW, east of I-5 off ramp to 236th Street SW
WMT4	3/29/12	I-5 ROW, east of I-5 south off ramp to SR 104
WMT5	4/3/12	I-5 ROW, west of I-5 south off ramp to 220th Street SW
WMT6	4/3/12	I-5 ROW, east of I-5 south off ramp to 220th Street SW
WMT7	4/3/12	I-5 ROW, east of 60th Avenue W
WMT8	4/3/12	I-5 ROW, east of I-5 and south of 212th Street SW
WLY3	4/5/12	I-5 ROW, northwest of I-5 and southwest of 52nd Avenue W
WLY4	4/9/12	Scriber Creek Park, southwest of Lynnwood Transit Center
WLY6	4/17/12	Northwest of I-5 and east of 208th Street SW

APPENDIX B

Photographs

Photograph 1. Wetland WSE1 facing north.

Photograph 2. Wetland WSE2 from north berm, facing north.

Photograph 3. Wetland WSE3, looking south at sample plot WSE3-SP1.

Photograph 4. Wetland WSE4, looking northeast at sample plot WSE4-SP1.

Photograph 5. Wetland WSE5 along 5th Avenue NE, facing south.

Photograph 6. Wetland WSE6, facing northeast.

Photograph 7. Wetland WSE7 from the south end, facing north.

Photograph 8. Wetland WSE8 from east of Thornton Creek, south of 5th Avenue NE crossing.

Photograph 9. Wetland WSH1 looking northeast at sample plot WSH1-SP1.

Photograph 10. Wetland WSH2 from the south end, facing north.

Photograph 11. Wetland WSH3 from the south side, facing north.

Photograph 12. Wetland WSH4 from the south end, facing north.

Photograph 13. Wetland WSH5 from the north end, facing southeast.

Photograph 14. Wetland WMT1 facing east side from culvert under SR 104 (McAleer Creek on left side of photograph).

Photograph 15. Wetland WMT2 from McAleer Creek, facing east.

Photograph 16. Wetland WMT3 looking north at sample plot WMT3-SP1.

Photograph 17. Wetland WMT4 from retaining wall, facing west.

Photograph 18. Wetland WMT5 from the center, facing south.

Photograph 19. Wetland WMT6 from the east side, facing west-southwest.

Photograph 20. Wetland WMT7 from the southeast, looking at sample plot WMT7-SP1.

Photograph 21. Wetland WMT8 from north looking south.

Photograph 22. Wetland WLY3 facing west.

Photograph 23. Wetland WLY4 near 200th Street SW and Cedar Valley Road, facing southeast (Scriber Creek on left side of photograph).

Photograph 24. Wetland WLY6 from access road, facing north-northeast.

APPENDIX C

Wetland Determination Data Forms

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

Project Site: Lynnwood Link Extension City/County: Seattle/King Sampling Date: 3/9/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WSE1-SP1

Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S29, T26N, 4E

Landform (hillslope, terrace, etc.): toe of slope Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): A Lat: 47.70557516600 Long: -122.32901515600 Datum: NAD83

Soil Map Unit Name: Urban land NWI classification: PFO

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

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

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

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

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

Remarks: Sample plot is located at the edge of the wetted channel on the east side.

VEGETATION – Use scientific names of plants

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10M)			
1. *Salix lucida*	90	yes	FACW
2. *Fraxinus latifolia*	10	no	FACW
3.			
4.			
50% = 50, 20% = 20	100	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Cornus sericea*	60	yes	FACW
2.			
3.			
4.			
5.			
50% = 30, 20% = 12	60	= Total Cover	
Herb Stratum (Plot size: 2M)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = ____, 20% = ____		= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	60	yes	FACU
2.			
50% = 30, 20% = 12	60	= Total Cover	
% Bare Ground in Herb Stratum ____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	66	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSE1-SP1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/2	100					gr silt loam	
5-26	10B 6/1	100					sand	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

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

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

Remarks:

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

Project Site: Lynnwood Link Extension   City/County: Seattle/King   Sampling Date: 3/9/12

Applicant/Owner: Sound Transit   State: WA   Sampling Point: WSE1-SP2

Investigator(s): M. Maynard, C. Worsley   Section, Township, Range: S29, 26N, 4E

Landform (hillslope, terrace, etc.): slope   Local relief (concave, convex, none): concave   Slope (%): 20

Subregion (LRR): A   Lat: 47.70558299100   Long: -122.32907995900   Datum: NAD83

Soil Map Unit Name: Urban land   NWI classification: upland

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

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

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

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

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

Remarks: The sample plot is located on the west side of the wetland on the hill slope to the I-5 off-ramp.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Crataegus monogyna*	30	yes	FACU
2. *Thuja plicata*	8	yes	FAC
3. *Pseudotsuga menziesii*	2	no	FACU
4. ____			
50% = 20, 20% = 8	40	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. ____			
2. ____			
3. ____			
4. ____			
5. ____			
50% = ____, 20% = ____		= Total Cover	
Herb Stratum (Plot size: 2M)			
1. ____			
2. ____			
3. ____			
4. ____			
5. ____			
6. ____			
7. ____			
8. ____			
9. ____			
10. ____			
11. ____			
50% = ____, 20% = ____		= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	100	yes	FACU
2. ____			
50% = 50, 20% = 20	100	= Total Cover	
% Bare Ground in Herb Stratum ____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSE1-SP2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/1	100					Sa Loam	
5-18	2.5Y 4/3	100					Sand	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Remarks*:* No primary or secondary wetland hydrology indicators were observed.

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

Project Site: Lynnwood Link Extension   City/County: Seattle/King   Sampling Date: 3/12/12

Applicant/Owner: Sound Transit   State: WA   Sampling Point: WSE2-SP1

Investigator(s): M. Maynard, C. Worsley   Section, Township, Range: S29, T26N, 4E

Landform (hillslope, terrace, etc.): depression   Local relief (concave, convex, none): concave   Slope (%): 10

Subregion (LRR): A   Lat: 47.70738983800   Long: -122.32896977200   Datum: NAD83

Soil Map Unit Name: Urban land   NWI classification: PSS

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

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

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

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

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

Remarks: Wetland is PAB with PSS fringe.The sample plot is located in the PSS fringe along the eastern boundary of wetland, approximately 10 feet north of the southern berm.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix lucida*	75	yes	FACW
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = 37.5, 20% = 15	75	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Juncus effusus*	10	yes	FACW
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
6. ____	____	____	____
7. ____	____	____	____
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = 5, 20% = 2	10	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	5	n/a*	FACU
2. ____	____	____	____
50% = 2.5, 20% = 1	5	= Total Cover	
% Bare Ground in Herb Stratum ____			

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: *excluded from calculations per chapter 2 guidance The Himalayan blackberry is overhanging the wetland boundary from the upland. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation. Species with 5% or less absolute coverage were not considered dominant

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSE2-SP1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10Y 4/1	60					Gr Sa Loam	
	10YR 3/1	40					Gr Sa Loam	
16-19	N 4/	70					Silt Loam	
	10YR 3/1	30					Silt Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks: The upper layer contains roots and organic debris and the lower layer is compacted.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches):	5	
Water Table Present?	Yes ☒	No ☐	Depth (inches):	surface	
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	surface	**Wetland Hydrology Present?** **Yes** ☒ **No** ☐

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

Remarks:

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

Project Site: Lynnwood Link Extension City/County: Seattle/King Sampling Date: 03/12/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WSE2-SP2

Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S29, T26N, 4E

Landform (hillslope, terrace, etc.): road fill slope Local relief (concave, convex, none): ____ Slope (%): _____

Subregion (LRR): A Lat: 47.70738415410 Long: -122.32893269600 Datum: NAD83

Soil Map Unit Name: Urban land NWI classification: upland

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

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

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

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

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

Remarks: WSE2-SP2 is located in the buffer to the east of the wetland on the road fill slope, approximately 8 feet north of the southern berm.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	____	____
2. _____	_____	____	____
3. _____	_____	____	____
4. _____	_____	____	____
50% = _____, 20% = _____	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. _____	_____	____	____
2. _____	_____	____	____
3. _____	_____	____	____
4. _____	_____	____	____
5. _____	_____	____	____
50% = _____, 20% = _____	_____	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. _____	_____	____	____
2. _____	_____	____	____
3. _____	_____	____	____
4. _____	_____	____	____
5. _____	_____	____	____
6. _____	_____	____	____
7. _____	_____	____	____
8. _____	_____	____	____
9. _____	_____	____	____
10. _____	_____	____	____
11. _____	_____	____	____
50% = _____, 20% = _____	_____	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. *Rubus armeniacus*	100	yes	FACU
2. _____	_____	____	____
50% = 50, 20% = 20	100	= Total Cover	
% Bare Ground in Herb Stratum 0			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation. Moss covered 100% of the ground.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSE2-SP2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-17	2.5Y 3/2	100					Gr Sa Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (inches):

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

Remarks: Soils have been historically disturbed. Small pieces/fragmentations of various textures/colors and cobbles.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Remarks: No primary or secondary wetland hydrology indicators observed.

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

Project Site: Lynnwood Link Extension City/County: Seattle/King Sampling Date: 3/14/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WSE3-SP1

Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S20, T26N, 4E

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

Subregion (LRR): A Lat: 47.72883384730 Long: -122.32369209500 Datum: NAD83

Soil Map Unit Name: Urban land NWI classification: PEM

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

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

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

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

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

Remarks: WSE3-SP1 is located in a reed canarygrass patch at the north end of the wetland, approximately 5 feet west of the fence and 15 feet west of the power pole.

VEGETATION – Use scientific names of plants

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10M)			
1. _____	_____	____	____
2. _____	_____	____	____
3. _____	_____	____	____
4. _____	_____	____	____
50% = _____, 20% = _____	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. _____	_____	____	____
2. _____	_____	____	____
3. _____	_____	____	____
4. _____	_____	____	____
5. _____	_____	____	____
50% = _____, 20% = _____	_____	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Phalaris arundinacea*	100	yes	FACW
2. _____	_____	____	____
3. _____	_____	____	____
4. _____	_____	____	____
5. _____	_____	____	____
6. _____	_____	____	____
7. _____	_____	____	____
8. _____	_____	____	____
9. _____	_____	____	____
10. _____	_____	____	____
11. _____	_____	____	____
50% = 50, 20% = 20	100	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	5	n/a*	FACU
2. _____	_____	____	____
50% = 2.5, 20% = 1	5	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: *excluded from calculations per chapter 2 guidance Rubus armeniacus is overhanging from upland. Species with 5% or less absolute coverage were not considered dominant. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSE3-SP1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 2/1	100					Si Loam	
10-18	10YR 3/1	70					Gr Sa Loam	
	10YR 5/2	18	10YR 5/8	12	C	M	Gr Sa Loam	inclusions

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (inches):

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

Remarks: Lower layer has inclusions making up 30% of the layer that are a 10YR 5/2 gravelly sandy loam with 10YR 5/8 redoximorphic features.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):		
Water Table Present?	Yes ☒	No ☐	Depth (inches):	5	
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	surface	

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

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

Remarks:

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

Project Site: Lynnwood Link Extension   City/County: Seattle/King   Sampling Date: 3/14/12

Applicant/Owner: Sound Transit   State: WA   Sampling Point: WSE3-SP2

Investigator(s): M. Maynard, C. Worsley   Section, Township, Range: S20, T26N, 4E

Landform (hillslope, terrace, etc.): _____   Local relief (concave, convex, none): ____   Slope (%): _____

Subregion (LRR): A   Lat: 47.72872167380   Long: -122.32377768800   Datum: NAD83

Soil Map Unit Name: Urban land   NWI classification: upland

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

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

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

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

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

Remarks: The sample plot is located west of the wetland in Himalayan blackberry, approximately 50 feet southwest of power pole and 20 feet west of the fence.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Crataegus monogyna*	20	yes	FACU
2. *ornamental maple*	15	n/a*	NL (UPL)
3. _____			
4. _____			
50% = 17.5, 20% = 7	35	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Rubus spectabilis*	5	no	FAC
2. _____			
3. _____			
4. _____			
5. _____			
50% = 2.5, 20% = 1	5	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = _____, 20% = _____	_____	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	100	yes	FACU
2. _____			
50% = 50, 20% = 20	100	= Total Cover	

% Bare Ground in Herb Stratum _____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks: *Exluded from calculations. Species with 5% or less absolute coverage were not considered dominant. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSE3-SP2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/1	100					Gr Sa Loam	
6-18							Gr Sand	Fill

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (inches):

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

Remarks: Cobbles in the lower layer

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Remarks: No primary or secondary wetland hydrology indicators observed. .

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

Project Site: Lynnwood Link Extension City/County: Seattle/Kinig Sampling Date: 3/14/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WSE4-SP1

Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S20, T26N, R4E

Landform (hillslope, terrace, etc.): bottom of linear depression Local relief (concave, convex, none): none Slope (%): _____

Subregion (LRR): A Lat: 47.72905088520 Long: -122.32339466800 Datum: NAD83

Soil Map Unit Name: Urban land NWI classification: PFO

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

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

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

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

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

Remarks: The sample plot is located on the east side of (adjacent to) standing water, approximately 35 feet east of the road and 25 feet west of the golf course. Between 2 western redcedars. Approximately 20 feet NNW of concrete monument.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Thuja plicata*	90	yes	FAC
2. *Ilex aquifolium*	2	no	NL (UPL)
3. _____	_____	____	____
4. _____	_____	____	____
50% = 46, 20% = 18.4	92	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Rubus spectabilis*	2	no	FAC
2. _____	_____	____	____
3. _____	_____	____	____
4. _____	_____	____	____
5. _____	_____	____	____
50% = 1, 20% = 0.4	2	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Athyrium filix femina*	20	yes	FAC
2. *Equisetum telmateia*	5	no	FACW
3. _____	_____	____	____
4. _____	_____	____	____
5. _____	_____	____	____
6. _____	_____	____	____
7. _____	_____	____	____
8. _____	_____	____	____
9. _____	_____	____	____
10. _____	_____	____	____
11. _____	_____	____	____
50% = 12.5, 20% = 5	25	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Hedera helix*	5	no	NL (UPL)
2. _____	_____	____	____
50% = 2.5, 20% = 1	5	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Species with 5% or less absolute coverage were not considered dominant. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSE4-SP1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/1	100					Mucky Lo	
5-11	10Y 4/1	92	10YR 4/3	8			Fine Sa Lo	
11-18	5Y 3/1	100					Gr Sa Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks: Partially decomposed leaf litter over soil. Organic lenses or layering, especially at 11 inches. Inclusions of silt loam in lower horizon (5Y 2/1). .

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	_____	
Water Table Present?	Yes ☒	No ☐	Depth (inches):	11	
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	surface	**Wetland Hydrology Present?** **Yes** ☒ **No** ☐

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

Remarks: Two inches of inundation near the sample plot.

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

Project Site: Lynnwood Link Extension City/County: Seattle/King Sampling Date: 3/14/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WSE4-SP2

Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S20, T26N, R4E

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

Subregion (LRR): A Lat: 47.72910037860 Long: -122.32329964000 Datum: NAD83

Soil Map Unit Name: Urban land NWI classification: Upland

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

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

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

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

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

Remarks: The sample plot is located approximately 18 feet east of WSE4-SP1 and approximately 10 feet west of the fence.

VEGETATION – Use scientific names of plants

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10M)			
1. *Thuja plicata*	45	yes	FAC
2. _____			
3. _____			
4. _____			
50% = 22.5, 20% = 9	45	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Sambucus racemosa*	10	yes	FACU
2. *Prunus sp. (laurel)*	2	no	
3. _____			
4. _____			
5. _____			
50% = 6, 20% = 2.4	12	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = _____, 20% = _____		= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	85	yes	FACU
2. _____			
50% = 42.5, 20% = 17	85	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Species with 5% or less absolute coverage were not considered dominant. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSE4-SP2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 2/2						Gr Sa Loam	
9-18	10YR 2/1						Gr Sa Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (inches):

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

Remarks: Cobbles observed below at 16 inches and below. .

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Remarks: No primary or secondary wetland hydrology indicators observed.

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

Project Site: Lynnwood Link Extension   City/County: Seattle/King   Sampling Date: 3/19/12

Applicant/Owner: Sound Transit   State: WA   Sampling Point: WSE5-SP1

Investigator(s): M. Maynard, C. Worsley   Section, Township, Range: S20, T26N, R4E

Landform (hillslope, terrace, etc.): toe of road fill slope   Local relief (concave, convex, none): concave   Slope (%): 2

Subregion (LRR): A   Lat: 47.73129462180   Long: -122.32368003200   Datum: NAD83

Soil Map Unit Name: Urban land   NWI classification: PFO

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

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

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

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

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

Remarks: Sample plot is located approximately 70 feet south of North Branch Thornton Creek, at toe of I-5 slope, approximately 15 feet west of the fence.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	85	yes	FAC
2. ______			
3. ______			
4. ______			
50% = 42.5, 20% = 17	85	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. ______			
2. ______			
3. ______			
4. ______			
5. ______			
50% = ______, 20% = ______		= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Athyrium filix-femina*	20	yes	FAC
2. *Equisetum telmateia*	60	yes	FACW
3. *Scirpus mircrocarpus*	2	no	OBL
4. *Ranunculus repens*	2	no	FACW
5. ______			
6. ______			
7. ______			
8. ______			
9. ______			
10. ______			
11. ______			
50% = 42, 20% = 16.8	84	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	25	yes	FACU
2. ______			
50% = 12.5, 20% = 5	25	= Total Cover	
% Bare Ground in Herb Stratum ______			

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSE5-SP1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-19	10YR 2/1	100					Gr Sa Loam	with cobbles. High organic content.

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks: Partially decomposed organic debris throughout the profile.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	_____
Water Table Present?	Yes ☐	No ☒	Depth (inches):	16
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	surface

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

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

Remarks: Water seeping into soil pit throughout profile

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

Project Site: Lynnwood Link Extension	City/County: Seattle/King		Sampling Date: 3/19/12
Applicant/Owner: Sound Transit		State: WA	Sampling Point: WSE5-SP2
Investigator(s): M. Maynard, C. Worsley		Section, Township, Range: S20, T26N, R4E	
Landform (hillslope, terrace, etc.): _____	Local relief (concave, convex, none): none		Slope (%): 10
Subregion (LRR): A	Lat: 47.73127973780	Long: -122.32376967800	Datum: NAD83
Soil Map Unit Name: Urban land		NWI classification: Upland	

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

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

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

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

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

Remarks: The sample plot is located approximately 22 feet east of I-5 guardrails and approximately 18 feet southwest of WSE5-SP1.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	90	yes	FAC
2. _____			
3. _____			
4. _____			
50% = 45, 20% = 18	90	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
50% = _____, 20% = _____	_____	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Equisetum telmateia*	30	yes	FACW
2. *Gallium aparine*	5	no	FACU
3. *Athyrium filix-femina*	2	no	FAC
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = 18.5, 20% = 7.4	37	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	60	yes	FACU
2. _____			
50% = 30, 20% = 12	60	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	66	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSE5-SP2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1							Duff	partially decomposed
1-8	10YR 3/2	100					Gr Sa Loam	
8-12	10YR 4/2	100					Gr Sa Loam	inclusions of sand
12-20	2.5Y 5/2	80	10YR 5/4	20	C	M	Gr Sand	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks: Disturbed, some trash in upper layer.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):		
Water Table Present?	Yes ☐	No ☒	Depth (inches):	17	
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	8	

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

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

Remarks:

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

Project Site: Lynnwood Link Extension City/County: Seattle/King Sampling Date: 3/19/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WSE6-SP1

Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S20, T26N, R4E

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

Subregion (LRR): A Lat: 47.73230327350 Long: -122.32368177900 Datum: NAD83

Soil Map Unit Name: Urban land NWI classification: PSS

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

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

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

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

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

Remarks: The sample plot is located approximately 75 feet south of 5th Ave/I-5 northbound off-ramp and approximately 18 feet east northeast of light pole. No paired plot for WSE6. Upland area to east and west consists of mowed fill slope for I-5 northbound off-ramp and 5th Avenue. Fill/disturbed soils with reed canarygrass and disturbance-tolerant roadside grasses.

VEGETATION – Use scientific names of plants

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10M)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
50% = _____, 20% = _____	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Spirea douglasii*	60	yes	FACW
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
50% = 30, 20% = 12	60	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Phalaris arundinacea*	90	yes	FACW
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
50% = 45, 20% = 18	90	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
50% = _____, 20% = _____	_____	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

☐ 1 – Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0[1]

☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ 5 - Wetland Non-Vascular Plants[1]

☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSE6-SP1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 2/1	100					Gr Si Loam	
9-18	10YR 4/2	100					Gr Sa Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

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

Remarks: Soils appear to have been disturbed. There are inclusions of sand in the lower layer and litter and debris throughout the profile.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	____	
Water Table Present?	Yes ☒	No ☐	Depth (inches):	surface	
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	surface	**Wetland Hydrology Present?** **Yes** ☒ **No** ☐

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

Remarks: The sample plot is adjacent to a microdepression with 1 inch of inundation.

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

Project Site: Lynnwood Link Extension | City/County: Seattle/King | Sampling Date: 3/19/12

Applicant/Owner: Sound Transit | State: WA | Sampling Point: WSE7-SP1

Investigator(s): M. Maynard, C. Worsley | Section, Township, Range: S20, T26N, R4E

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

Subregion (LRR): A | Lat: 47.73291615630 | Long: -122.32406708600 | Datum: NAD83

Soil Map Unit Name: Urban land | NWI classification: PEM

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

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

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

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

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

Remarks: The sample plot is located approximately 20 feet south southeast of tree in the wetland, east side of the southern cattail patch.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ornamental maple*	15	n/a*	-
2. _____			
3. _____			
4. _____			
50% = 7.5, 20% = 3	15	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
50% = _____, 20% = _____		= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Typha latifolia*	70	yes	OBL
2. *Agrostis capillaris*	40	yes	FAC
3. *Festuca rubra*	20	no	FAC
4. *Scirpus mircrocarpus*	10	no	OBL
5. *Lemna minor*	60	yes	OBL
6. *Holcus lanatus*	10	no	FAC
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = 105, 20% = 42	210	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	25	yes	FACU
2. _____			
50% = 12.5, 20% = 5	25	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: *excluded from calculations per chapter 2 guidance The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation. One tree in wetland (ornamental maple).

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSE7-SP1

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

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-6	10YR 2/1						Si Loam	
6-20	10YR 2/1						Gr Sa Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks: Inclusions of sand in the lower horizon. High concentrations of organic matter.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches):	6
Water Table Present?	Yes ☒	No ☐	Depth (inches):	surface
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	surface

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

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

Remarks:

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

Project Site: Lynnwood Link Extension City/County: Seattle/King Sampling Date: 3/19/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WSE7-SP2

Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S20, T26N, R4E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): convex Slope (%): 2

Subregion (LRR): A Lat: 47.73291045000 Long: -122.32400494100 Datum: NAD83

Soil Map Unit Name: Urban land NWI classification: Upland

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

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

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

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

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

Remarks: The sample plot is located east of the wetland in mowed grass, approximately 30 feet southeast of ornamental maple tree. No SP flag because area is mowed.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	____	____
2. _____	_____	____	____
3. _____	_____	____	____
4. _____	_____	____	____
50% = _____, 20% = _____	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. _____	_____	____	____
2. _____	_____	____	____
3. _____	_____	____	____
4. _____	_____	____	____
5. _____	_____	____	____
50% = _____, 20% = _____	_____	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Agrostis capillaris*	40	yes	FAC
2. *Festuca rubra*	30	yes	FAC
3. *Holcus lanatus*	30	yes	FAC
4. *Schedonorus phoenix*	5	no	FACU
5. *Taraxicum officinale*	5	no	FACU
6. _____	_____	____	____
7. _____	_____	____	____
8. _____	_____	____	____
9. _____	_____	____	____
10. _____	_____	____	____
11. _____	_____	____	____
50% = 55, 20% = 22	110	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	10	yes	FACU
2. _____	_____	____	____
50% = 5, 20% = 2	10	= Total Cover	
% Bare Ground in Herb Stratum 0			

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation. Dominant herbaceous species are all FAC disturbance-tolerant plants commonly found in maintained road ROW.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSE7-SP2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1	100					Loam	
4-14	10YR 3/2	100					Gr Sa Loam	with cobbles

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (inches):

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

Remarks: Profile is compacted. Various inclusions. .

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☐	Depth (inches):		
Water Table Present?	Yes ☐	No ☐	Depth (inches):		
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	4	

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

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

Remarks: Seeping in at 4 inches below the surface. Compacted soils are likely creating a restrictive layer.

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

Project Site: Lynnwood Link Extension   City/County: Seattle/King   Sampling Date: 3/21/12

Applicant/Owner: Sound Transit   State: WA   Sampling Point: WSE8-SP1

Investigator(s): M. Maynard, C. Worsley   Section, Township, Range: S20, T26N, R4E

Landform (hillslope, terrace, etc.): ______   Local relief (concave, convex, none): none   Slope (%): 0

Subregion (LRR): A   Lat: 47.73149499190   Long: -122.32336785500   Datum: NAD83

Soil Map Unit Name: Urban land   NWI classification: PFO

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

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

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

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

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

Remarks: The sample plot is located approximately 15 feet northeast of NB Thornton Creek 5th Ave crossing. No paired upland sample plot.

VEGETATION – Use scientific names of plants

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10M)			
1. *Alnus rubra*	35	yes	FAC
2. *Salix lucida*	60	yes	FACW
3. ______			
4. ______			
50% = 47.5, 20% = 19	95	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. ______			
2. ______			
3. ______			
4. ______			
5. ______			
50% = ______, 20% = ______	______	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Athyrium filix-femina*	20	yes	FAC
2. ______			
3. ______			
4. ______			
5. ______			
6. ______			
7. ______			
8. ______			
9. ______			
10. ______			
11. ______			
50% = 10, 20% = 4	20	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	20	yes	FACU
2. ______			
50% = 10, 20% = 4	20	= Total Cover	
% Bare Ground in Herb Stratum 80			

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSE8-SP1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 2/1	100					v. Mu Loam	
10-20	10YR 3/1	100					v. Mu Loam	
20-22	10Y 3/1	100					Gr Sand	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks: Sulfidic odor. Soil from 0 to 20 inches has high organic content with varying degrees of decomposition.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	_____	
Water Table Present?	Yes ☒	No ☐	Depth (inches):	8	
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	surface	**Wetland Hydrology Present?** **Yes** ☒ **No** ☐

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

Remarks:

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

Project Site: Lynnwood Link Extension City/County: Shoreline/King Sampling Date: 3/15/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WSH1-SP1

Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S17, T26N, R4E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR): A Lat: 47.73447093280 Long: -122.32399213200 Datum: NAD83

Soil Map Unit Name: Urban Land NWI classification: PEM

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

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

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

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

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

Remarks: The sample plot is located in the northern arm of the wetland, approximately 15 feet south southwest of a birch tree. Heavy rains during site investigation and more than average precipitation for the five days prior.

VEGETATION – Use scientific names of plants

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10M)			
1. *Betula papyrifera(overhaning from boundary)*	30	yes	FAC
2. _____			
3. _____			
4. _____			
50% = 15, 20% = 6	30	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
50% = _____, 20% = _____		= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Juncus effusus*	30	yes	FACW
2. *Equisetum fluviatile*	40	yes	OBL
3. *Agrostis capillaris*	15	no	FAC
4. *Ranunculus repens*	35	yes	FACW
5. *Epilobium ciliatum*	2	no	FACW
6. *Hypochaeris radicata*	2	no	FACU
7. *Taraxacum officinale*	2	no	FACU
8. *Trifolium pratense*	5	no	FACU
9. *Holcus lanatus*	2	no	FAC
10. *Rorippa nasturtium-aquaticum*	25	yes	OBL
11. _____			
50% = 79, 20% = 31.6	158	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus ursinus*	2	no	FACU
2. *Rubus armeniacus (overhanging from upland)*	8	n/a*	FACU
50% = 5, 20% = 2	10	= Total Cover	
% Bare Ground in Herb Stratum 20			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: *excluded from calculations per chapter 2 guidance Species with 5% or less absolute coverage were not considered dominant. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSH1-SP1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1	100					Si Loam	
8-18	2.5Y 4/1	95	2.5Y 4/6	5	C	M	Gr Sa Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks: Inclusions of 10YR 2/1 sandy loam from 15 inches and below.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	_____	
Water Table Present?	Yes ☒	No ☐	Depth (inches):	7	
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	surface	**Wetland Hydrology Present?** **Yes** ☒ **No** ☐

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

Remarks: Sample plot is adjacent to standing water (1 inch deep).

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

Project Site: Lynnwood Link Extension City/County: Shoreline/King Sampling Date: 3/15/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WSH1-SP2

Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S17, T26N, R4E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): convex Slope (%): 4

Subregion (LRR): A Lat: 47.73441940360 Long: -122.32406798700 Datum: NAD83

Soil Map Unit Name: Urban Land NWI classification: Upland

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

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

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

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

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

Remarks: The sample plot is located northwest of the wetland (between north and west arms) on a grass slope, between north and west arms. Heavy rains during site investigation and more than average precipitation for the five days prior.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra (overhanging from S. WL boundary)*	40	n/a*	FAC
2. _____			
3. _____			
4. _____			
50% = _____, 20% = _____	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
50% = _____, 20% = _____	_____	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Festuca rubra*	50	yes	FAC
2. *Agrostis capillaris*	50	yes	FAC
3. *Schedonorus phoenix*	20	no	FAC
4. *Achillea millefolium*	10	no	FACU
5. *Taraxacum officinale*	5	no	FACU
6. *Hypochaeris radicata*	5	no	FACU
7. *Holcus lanatus*	5	no	FAC
8. *Trifolium repens*	5	no	FAC
9. *Trifolium pratense*	5	no	FACU
10. _____			
11. _____			
50% = 77.5, 20% = 31	155	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	2	no	FACU
2. _____			
50% = 1, 20% = 0.4	2	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: *excluded from calculations per chapter 2 guidance Area is mowed/maintained. Moss in grass. Species with 5% or less absolute coverage were not considered dominant. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation. Dominant herbaceous species are all FAC disturbance-tolerant plants commonly found in maintained road ROW.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSH1-SP2

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

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-5	10YR 2/1	100					Sa Loam	
5-15	2.5Y 3/2	100					Gr Sa Loam	
15-18	2.5Y 4/2	85	10YR 4/6	15	C	M	Gr Sa Loam	with cobbles

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

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

Remarks: Garbage debris at 12 inches.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	____	
Water Table Present?	Yes ☐	No ☒	Depth (inches):	16	
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	10	**Wetland Hydrology Present?** **Yes** ☒ **No** ☐

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

Remarks: Water seeping in to the pit at 10 inches.

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

Project Site: Lynnwood Link Extension | City/County: Shoreline/King | Sampling Date: 3/15/12

Applicant/Owner: Sound Transit | State: WA | Sampling Point: WSH2-SP1

Investigator(s): M. Maynard, C. Worsley | Section, Township, Range: S17, T26N, R4E

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): concave | Slope (%): 2

Subregion (LRR): A | Lat: 47.73871180380 | Long: -122.32704887700 | Datum: NAD83

Soil Map Unit Name: Urban Land | NWI classification: PEM

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

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

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

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

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

Remarks: Located in centerof swale, approximately 8 feet west of sound wall. Heavy rains during site investigation and more than average precipitation for the five days prior.

VEGETATION – Use scientific names of plants

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10M)			
1. ____			
2. ____			
3. ____			
4. ____			
50% = ____, 20% = ____	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. ____			
2. ____			
3. ____			
4. ____			
5. ____			
50% = ____, 20% = ____	____	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Juncus effusus*	50	yes	FACW
2. *Scirpus microcarpus*	5	no	OBL
3. ____			
4. ____			
5. ____			
6. ____			
7. ____			
8. ____			
9. ____			
10. ____			
11. *Unknown grasses*	90	n/a*	-
50% = 27.5, 20% = 11	55	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. ____			
2. ____			
50% = ____, 20% = ____	____	= Total Cover	
% Bare Ground in Herb Stratum ____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: *The dominant vegetation (grasses) is mowed and unidentifiable. May be a WSDOT mix. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSH2-SP1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 2/2	70	5YR 3/4	25	C	M	Gr Sa Loam	
			7.5YR 2.5/3	5	C	M		
11-20	2.5Y 3/1	100					Silt Loam	Compacted

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

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

Remarks: Lower layer appears to be disturbed and contains inclusions.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches):	4
Water Table Present?	Yes ☒	No ☐	Depth (inches):	surface
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	surface

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

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

Remarks:

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

Project Site: Lynnwood Link Extension	City/County: Shoreline/King		Sampling Date: 3/15/12
Applicant/Owner: Sound Transit		State: WA	Sampling Point: WSH2-SP2
Investigator(s): M. Maynard, C. Worsley		Section, Township, Range: S17, T26N, R4E	
Landform (hillslope, terrace, etc.): _____	Local relief (concave, convex, none): convex		Slope (%): 1
Subregion (LRR): A	Lat: 47.73875709240	Long: -122.32704648000	Datum: NAD83
Soil Map Unit Name: Urban Land		NWI classification: Upland	

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

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

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

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

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

Remarks: The sample plot is located approximately 3 feet north of the wetland boundary and 4 feet west of the sound wall. Heavy rains during site investigation and more than average precipitation for the five days prior.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	____	____
2. _____	_____	____	____
3. _____	_____	____	____
4. _____	_____	____	____
50% = _____, 20% = _____	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. _____	_____	____	____
2. _____	_____	____	____
3. _____	_____	____	____
4. _____	_____	____	____
5. _____	_____	____	____
50% = _____, 20% = _____	_____	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Galium aparine*	25	yes	FACU
2. *Geranium molle*	2	no	NL (UPL)
3. *Holcus lanatus*	2	no	FAC
4. *Echinochloa crus-galli*	10	yes	FACW
5. _____	_____	____	____
6. _____	_____	____	____
7. _____	_____	____	____
8. _____	_____	____	____
9. _____	_____	____	____
10. _____	_____	____	____
11. *Unknown grass*	95	n/a*	-
50% = 19.5, 20% = 7.8	39	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. _____	_____	____	____
2. _____	_____	____	____
50% = _____, 20% = _____	_____	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks: *The dominant vegetation (grasses) is mowed and unidentifiable. May be a WSDOT mix. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSH2-SP2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100					Loam	
2-6	10YR 2/2	100					Gr Sa Loam	
6-18	10YR 3/2	100					Gr Sa Loam	with cobbles

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

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

Remarks: Soil is disturbed, pieces of concrete.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	____
Water Table Present?	Yes ☐	No ☒	Depth (inches):	15
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	10

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

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

Remarks: Soils were saturated at 10 inches and below. This was during a heavy rain event.

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

Project Site: Lynnwood Link Extension City/County: Shoreline/King Sampling Date: 3/15/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WSH3-SP1

Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S17, T26N, R4E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none Slope (%): 2

Subregion (LRR): A Lat: 47.74089017690 Long: -122.32828328200 Datum: NAD83

Soil Map Unit Name: Urban Land NWI classification: PEM

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

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

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

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

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

Remarks: The sample plot is located approximately 5 feet west of the chainlink fence. Heavy rains during site investigation and more than average precipitation for the five days prior.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Thuja plicata*	15	yes	FAC
2. _____	_____	____	____
3. _____	_____	____	____
4. _____	_____	____	____
50% = 7.5, 20% = 3	15	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. _____	_____	____	____
2. _____	_____	____	____
3. _____	_____	____	____
4. _____	_____	____	____
5. _____	_____	____	____
50% = _____, 20% = _____	_____	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Phalaris arundinacea*	100	yes	FACW
2. *Equisetum telmateia*	15	no	FACW
3. _____	_____	____	____
4. _____	_____	____	____
5. _____	_____	____	____
6. _____	_____	____	____
7. _____	_____	____	____
8. _____	_____	____	____
9. _____	_____	____	____
10. _____	_____	____	____
11. _____	_____	____	____
50% = 57.5, 20% = 23	115	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	10	yes	FACU
2. _____	_____	____	____
50% = 5, 20% = 2	10	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	66	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSH3-SP1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/2	100					Gr Sa Loam	
5-19	10YR 4/2	70	7.5YR 3/4	30			Gr Sa Loam	with cobbles

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Remarks: Soils were dry below 9 inches below the surface when the pit was dug. It filled to 7 inches below the surface..

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

Project Site:	Lynnwood Link Extension	City/County:	Shoreline/King	Sampling Date:	3/15/12
Applicant/Owner:	Sound Transit	State:	WA	Sampling Point:	WSH3-SP2
Investigator(s):	M. Maynard, C. Worsley	Section, Township, Range:	S17, T26N, R4E		
Landform (hillslope, terrace, etc.):	_____	Local relief (concave, convex, none):	none	Slope (%):	2
Subregion (LRR):	A	Lat: 47.74094607150	Long: -122.32831303000	Datum:	NAD83
Soil Map Unit Name:	Urban Land			NWI classification:	Upland

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

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

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

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

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

Remarks: Heavy recent rains prior to delineations. The sample plot is located north of the wetland, approximately 6 feet west of the fence and 15 feet north of WSH3-SP1. Heavy rains during site investigation and more than average precipitation for the five days prior.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ornamental cedar*	15	n/a*	-
2. _____			
3. _____			
4. _____			
50% = _____, 20% = _____	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Ornamental shrub*	5	n/a*	-
2. _____			
3. _____			
4. _____			
5. _____			
50% = _____, 20% = _____	_____	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Phalaris arundinacea*	100	yes	FACW
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = 50, 20% = 20	100	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	5	no	FACU
2. _____			
50% = _____, 20% = _____	_____	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: The ornamental species are located outside of the fence in a landscaped area. Species with 5% or less absolute coverage were not considered dominant. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSH3-SP2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 3/2	100					Gr Sa Loam	
11-18	10YR 4/2	70	7.5YR 3/4	30			Gr Sa Loam	with cobbles

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (inches):

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

Remarks: Debris in soil.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):		
Water Table Present?	Yes ☒	No ☐	Depth (inches):	12	
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	surface	**Wetland Hydrology Present?** **Yes** ☒ **No** ☐

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

Remarks: Heavy rains likely impacted the hydrology at the time of the site visit.

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

Project Site: Lynnwood Link Extension — City/County: Shoreline/King — Sampling Date: 3/21/12

Applicant/Owner: Sound Transit — State: WA — Sampling Point: WSH4-SP1

Investigator(s): M. Maynard, C. Worsley — Section, Township, Range: S05, T26N, R4E

Landform (hillslope, terrace, etc.): linear depression — Local relief (concave, convex, none): concave — Slope (%): 1

Subregion (LRR): A — Lat: 47.77536223460 — Long: -122.31685488000 — Datum: NAD83

Soil Map Unit Name: Urban Land — NWI classification: PFO

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

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

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

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

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

Remarks: Sample plot is located approximately 60 feet west southwest of red house, approximately 18 feet west of right-of-way fence, in the lowest part of the wetland (in ditch).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	90	yes	FAC
2.			
3.			
4.			
50% = 45, 20% = 18	90	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Rubus spectabilis*	40	yes	FAC
2.			
3.			
4.			
5.			
50% = 20, 20% = 8	40	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Phalaris arundinacea*	45	yes	FACW
2. *Glyceria striata*	15	no	OBL
3. *Equisetum telmataeia*	40	yes	FACW
4. *Ranunculus repens*	5	no	FACW
5. *Athyrium filix-femina*	5	no	FAC
6.			
7.			
8.			
9.			
10.			
11.			
50% = 55, 20% = 22	110	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	40	yes	FACU
2.			
50% = 20, 20% = 8	40	= Total Cover	

% Bare Ground in Herb Stratum _____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	80	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSH4-SP1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/1	100					Si Loam	high organics
4-20	10YR 2/2	100					Sand	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (inches):

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☒	No ☐	Depth (inches):	1
Water Table Present?	Yes ☒	No ☐	Depth (inches):	surface
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	surface

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

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

Remarks:

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

Project Site: Lynnwood Link Extension — City/County: Shoreline/King — Sampling Date: 3/21/12

Applicant/Owner: Sound Transit — State: WA — Sampling Point: WSH4-SP2

Investigator(s): M. Maynard, C. Worsley — Section, Township, Range: S05, T26N, R4E

Landform (hillslope, terrace, etc.): small terrace (shelf) on hillslope — Local relief (concave, convex, none): none — Slope (%): 0

Subregion (LRR): A — Lat: 47.77541550900 — Long: -122.31689681300 — Datum: NAD83

Soil Map Unit Name: Urban Land — NWI classification: Upland

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

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

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

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

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

Remarks: The sample plot is located approximately 18 feet upslope of WSH4-SP1 on a shelf of the hillslope. The overall hillslope is an approximately 30% slope.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	20	yes	FAC
2. *Pseudotsuga menzesii*	25	yes	FACU
3.			
4.			
50% = 22.5, 20% = 9	45	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1.			
2.			
3.			
4.			
5.			
50% = ____, 20% = ____		= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Equisetum telmateia*	5	no	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = 2.5, 20% = 1	5	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	90	yes	FACU
2.			
50% = 45, 20% = 9	90	= Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Species with 5% or less absolute coverage were not considered dominant. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSH4-SP2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/1	100					Gr Sa Loam	
6-19	2.5Y 4/2	100					Gr Sa Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

Remarks: No primary or secondary wetland hydrology indicators are present.

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

Project Site: Lynnwood Link Extension City/County: Shoreline/King Sampling Date: 3/21/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WSH5-SP1

Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S05, T26N, R4E

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

Subregion (LRR): A Lat: 47.77671936140 Long: -122.31690827100 Datum: NAD83

Soil Map Unit Name: Urban Land NWI classification: PFO

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

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

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

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

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

Remarks: The sample plot is located on the west side of McAleer Creek, approximately 40 feet west northwest of the outlet.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix scouleriana*	30	yes	FAC
2. *Alnus rubra*	15	yes	FAC
3. *Betula sp.*	15	yes	-
4. _____			
50% = 60, 20% = 12	60	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
50% = _____, 20% = _____		= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Phalaris arundinacea*	100	yes	FACW
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = 50, 20% = 20	100	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	5	no	FACU
2. _____			
50% = 2.5, 20% = 1	5	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: Species with 5% or less absolute coverage were not considered dominant. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSH5-SP1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	100					Sa Loam	
10-19	2.5Y 3/1	99	10YR 3/6	1	C	M	Gr Sand	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (inches):

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

Remarks: Redox concentrations in upper part of lower layer.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Remarks:

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

Project Site: Lynnwood Link Extension   City/County: Shoreline/King   Sampling Date: 3/21/12

Applicant/Owner: Sound Transit   State: WA   Sampling Point: WSH5-SP2

Investigator(s): M. Maynard, C. Worsley   Section, Township, Range: S05, T26N, R4E

Landform (hillslope, terrace, etc.): slope   Local relief (concave, convex, none): none   Slope (%): 15

Subregion (LRR): A   Lat: 47.77676142620   Long: -122.31717815600   Datum: NAD83

Soil Map Unit Name: Urban Land   NWI classification: Upland

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

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

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

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

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

Remarks: The sample plot is located west of the wetland and McAleer Creek, on the I-5 slope.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus balsamifera*	80	yes	FAC
2. *Pdeudotsuga menzeisii*	20	yes	FACU
3.			
4.			
50% = 50, 20% = 20	100	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1.			
2.			
3.			
4.			
5.			
50% = ___, 20% = ___		= Total Cover	
Herb Stratum (Plot size: 2M)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = ___, 20% = ___		= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	75	yes	FACU
2. *Hedera helix*	2	no	NL (UPL)
50% = 38.5, 20% = 15.4	77	= Total Cover	
% Bare Ground in Herb Stratum ___			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Moss covers approximately 40% of the sample plot. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WSH5-SP2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 3/3	100					Loam	
9-18	5Y 5/2	85	10YR 4/6	15	C	M	Gr Sa Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Remarks:

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

Project Site: Lynnwood Link Extension	City/County: ML Terrace/Snohomish	Sampling Date: 3/27/12
Applicant/Owner: Sound Transit	State: WA	Sampling Point: WMT1-SP1
Investigator(s): M. Maynard, C. Worsley	Section, Township, Range: S32, T27N, R4E	
Landform (hillslope, terrace, etc.): _____	Local relief (concave, convex, none): convex	Slope (%): 2
Subregion (LRR): A	Lat: 47.77842833220	Long: -122.31656532200	Datum: NAD83
Soil Map Unit Name: Urban Land	NWI classification: PFO

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

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

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

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

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

Remarks: **The sample plot is located approximately 40 feet southwest of McAleer Creek inlet/culvert. It is located on the northwest side of the wetland, approximately 10 feet west of McAleer Creek.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	40	yes	FAC
2. *Betula sp*	15	yes	-
3. _____			
4. _____			
50% = 27.5, 20% = 11	55	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Rubus spectabilis*	25	yes	FAC
2. _____			
3. _____			
4. _____			
5. _____			
50% = 12.5, 20% = 5	25	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Equisetum telmateia*	75	yes	FACW
2. *Athyrium filix-femina*	35	yes	FAC
3. *Ranunculus repens*	35	yes	FACW
4. *Polystichum munitum*	10	no	FACU
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = 77.5, 20% = 31	155	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	15	yes	FACU
2. _____			
50% = 7.5, 20% = 3	15	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	71	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WMT1-SP1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/2	100	-	-	-	-	Silt Loam	
5-9	10YR 4/1	80	10YR 4/6	20	C	M	Gr Sa Loam	
9-18	10Y 4/1	60	10YR 4/6	40	C	M	v. Sa Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	_____
Water Table Present?	Yes ☐	No ☒	Depth (inches):	13
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	surface

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

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

Remarks:

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

Project Site: Lynnwood Link Extension City/County: ML Terrace/Snohomish Sampling Date: 3/27/12
Applicant/Owner: Sound Transit State: WA Sampling Point: WMT1-SP2
Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S32, T27N, R4E
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 18
Subregion (LRR): A Lat: 47.77849900740 Long: -122.31659300400 Datum: NAD83
Soil Map Unit Name: Urban Land NWI classification: Upland
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: **The sample plot is located approximately 40 feet west of McAleer Creek inlet/culvert, on the slope northwest of the wetland.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	55	yes	FAC
2. *Pseudotsuga menzeisii*	8	no	FACU
3.			
4.			
50% = 31.5, 20% = 12.6	63	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1.			
2.			
3.			
4.			
5.			
50% = ____, 20% = ____		= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Polystichum munitum*	5	no	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = ____, 20% = ____	5	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	80	yes	FACU
2.			
50% = 40, 20% = 16	80	= Total Cover	
% Bare Ground in Herb Stratum ____			

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Moss covers approximately 40% of the soil surface. Species with 5% or less absolute coverage were not considered dominant. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WMT1-SP2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 3/2	100					Gr Sa Loam	
9-18	2.5Y 5/2	70	7.5YR 4/6	30	C	M	Gr Sa Loam	Mostly sand

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

Remarks:

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

Project Site: Lynnwood Link Extension City/County: ML Terrace/Snohomish Sampling Date: 3/27/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WMT2-SP1

Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S32, T27N, R4E

Landform (hillslope, terrace, etc.): mid slope Local relief (concave, convex, none): none Slope (%): 50

Subregion (LRR): A Lat: 47.77953531010 Long: -122.31607243300 Datum: NAD83

Soil Map Unit Name: Urban Land NWI classification: PFO

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

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

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

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

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

Remarks: **The sample plot is located on the slope east of McAleer Creek, approximately 40 feet from the stream and 30 feet west of the right-of-way fence.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus balsamifera*	40	yes	FAC
2. *Ilex aquifolium*	5	no	NL (UPL)
3. ______	______	____	____
4. ____	______	____	____
50% = 22.5, 20% = 9	45	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. ______	______	____	____
2. ______	______	____	____
3. ______	______	____	____
4. ______	______	____	____
5. ______	______	____	____
50% = ______, 20% = ______	______	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Equisetum hymale*	90	yes	FACW
2. *Rubus ursinus*	70	yes	FACU
3. ______	______	____	____
4. ______	______	____	____
5. ______	______	____	____
6. ______	______	____	____
7. ______	______	____	____
8. ______	______	____	____
9. ______	______	____	____
10. ______	______	____	____
11. ______	______	____	____
50% = 80, 20% = 32	160	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	10	yes	FACU
2. ______	______	____	____
50% = 5, 20% = 2	10	= Total Cover	
% Bare Ground in Herb Stratum ______			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	______	x1 =	______
FACW species	90	x2 =	180
FAC species	40	x3 =	120
FACU species	80	x4 =	320
UPL species	5	x5 =	25
Column Totals:	215 (A)		645 (B)

Prevalence Index = B/A = 3.0

Hydrophytic Vegetation Indicators:

☐ 1 – Rapid Test for Hydrophytic Vegetation

☐ 2 - Dominance Test is >50%

☒ 3 - Prevalence Index is ≤3.0[1]

☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ 5 - Wetland Non-Vascular Plants[1]

☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

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

Remarks: Species with 5% or less absolute coverage were not considered dominant. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WMT2-SP1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	100					Sa loam	
6-12	2.5Y 4/2		10YR 5/6		C	M	Gr Sa Loam	
12+								Extremely compacted soil

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: Very compacted soils

Depth (inches): at 12 inches below the surface

Hydric Soils Present? Yes ☒ No ☐

Remarks: Restrictive layer/extremely compated at 12 inches.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☒	No	☐	Depth (inches):	10
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	0-12

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks: Soils were saturated from the surface to 12 inches below the surface (water was seeping in from the upgradient side of the sample plot). Water seeping in from upgradient side. .

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

Project Site: Lynnwood Link Extension City/County: ML Terrace/Snohomish Sampling Date: 3/27/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WMT2-SP2

Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S32, T27N, R4E

Landform (hillslope, terrace, etc.): flat bench Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): A Lat: 47.77955318300 Long: -122.31597964400 Datum: NAD83

Soil Map Unit Name: Urban Land NWI classification: Upland

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

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

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

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

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

Remarks: **The sample plot is located east of the wetland on a flat bench, approximately 5 feet southwest of the right-of-way fence.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pseudotsuga menzeisii*	65	yes	FACU
2. *Prunus emerginata*	10	no	FACU
3. *Alnus rubra*	40	yes	FAC
4.			
50% = 57.5, 20% = 23	115	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1.			
2.			
3.			
4.			
5.			
50% = _____, 20% = _____		= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Polystichum munitum*	5	no	FACU
2. *Rubus ursinus*	70	yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = 37.5, 20% = 15	75	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	40	yes	FACU
2.			
50% = 20, 20% = 8	40	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	25	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WMT2-SP2

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

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-2							Duff	
2-10	10YR 3/3	100					Sa Loam	with cobbles
10-18	10YR 3/4	100					Sa Loam	with cobbles

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks: Inclusions of other colors from 2-8 inches.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Remarks: No primary or secondary wetland hydrology indicators observed.

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

Project Site: Lynnwood Link Extension City/County: ML Terrace/Snohomish Sampling Date: 3/28/12
Applicant/Owner: Sound Transit State: WA Sampling Point: WMT3-SP1
Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S32, T27N, R4E
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): A Lat: 47.78429623900 Long: -122.31451165100 Datum: NAD83
Soil Map Unit Name: Indianola loamy sand NWI classification: PFO
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: **The sample plot is located near a patch of skunk cabbage, approximately 25 feet west of the right-of-way fence, 15 feet west of a hemlock on a stump, and 25 feet south of remnant high visibility fence.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Tsuga heterophylla (on stump)*	15	no	FACU
2. *Prunus emerginata (on hummock)*	40	yes	FACU
3. *Alnus rubra*	75	yes	FAC
4. ____			
50% = 65, 20% = 26	130	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Rubus spectabilis*	80	yes	FAC
2. *Sorbus aucuparia (sapling)*	2	no	NL (UPL)
3. *Thuja plicata (sapling)*	2	no	FAC
4. _____			
5. _____			
50% = 42, 20% = 16.8	84	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Athyrium filix-femina*	70	yes	FAC
2. *Lysichiton americanus*	20	yes	OBL
3. *Polystichum munitum*	2	no	FACU
4. *Equisetum telmataeia*	5	no	FACW
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = 48.5, 20% = 19.4	97	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. _____			
2. _____			
50% = _____, 20% = _____	_____	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	80	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WMT3-SP1

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

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-11	10YR 3/1	100					Si Loam	
11-18	10YR 2/1	100					Si Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

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

Remarks: High concentrations of organic matter with varying degrees of decomposition.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	______
Water Table Present?	Yes ☐	No ☒	Depth (inches):	16
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches):	13

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

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

Remarks: Wetland hydrology is presumed, based on the presence of water-stained leaves and saturation within 18 inches.

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

Project Site: Lynnwood Link Extension City/County: ML Terrace/Snohomish Sampling Date: 3/28/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WMT3-SP2

Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S32, T27N, 4E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): convex Slope (%): 15

Subregion (LRR): A Lat: 47.78444675300 Long: -122.31462495000 Datum: NAD83

Soil Map Unit Name: Indianola loamy sand NWI classification: Upland

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

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

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

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

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

Remarks: **The sample plot is located northwest of the wetland, approximately 15 feet north of remnant high visibility fence.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	40	yes	FAC
2. _____			
3. _____			
4. _____			
50% = 20, 20% = 8	40	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
50% = _____, 20% = _____	_____	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Equisetum telmateia*	25	yes	FACW
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = 12.5, 20% = 5	25	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	90	yes	FACU
2. _____			
50% = 45.5, 20% = 18	90	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	66	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WMT3-SP2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/2	100					Sa Loam	
3-18	2.5Y 4/2	95	10YR 4/6	5	C	M	v. Sa Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (inches):

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Remarks: No primary or secondary wetland hydrology indicators observed.

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

Project Site: Lynnwood Link Extension City/County: ML Terrace/Snohomish Sampling Date: 3/29/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WMT4-SP1

Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S32, T27N, R4E

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

Subregion (LRR): A Lat: 47.77989034900 Long: -122.31826331600 Datum: NAD83

Soil Map Unit Name: Alderwood-Urban Land NWI classification: PFO

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

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

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

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

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

Remarks: **The sample plot is located approximately 30 feet west of the large retaining wall and approximately 15 feet east of the right-of-way fence, near a red alder. Raining during the site investigation and heavy rains the night before.**

VEGETATION – Use scientific names of plants

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. *Alnus rubra*	40	yes	FAC
2. _____			
3. _____			
4. _____			
50% = 20, 20% = 8	40	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. *Rubus spectabilis*	80	yes	FAC
2. _____			
3. _____			
4. _____			
5. _____			
50% = 40, 20% = 16	80	= Total Cover	
Herb Stratum (Plot size: _____)			
1. *Athyrium filix-femina*	20	yes	FAC
2. *Polystichum munitum*	2	no	FACU
3. *Phalaris arundinacea*	2	no	FACW
4. *Equisetum fluviatile*	2	no	OBL
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = 13, 20% = 5.2	26	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. *Rubus armeniacus*	50	yes	FACU
2. _____			
50% = 25, 20% = 10	50	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

☐ 1 – Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0[1]

☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ 5 - Wetland Non-Vascular Plants[1]

☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: Species with 5% or less absolute coverage were not considered dominant. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WMT4-SP1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/2	100					Loam	
5-16	10Y 3/1	100					Gr Sand	
16-18	10GY 4/1	30					v. Sa Loam	
	5Y 3/1	70					v. Sa Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (inches):

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):		
Water Table Present?	Yes ☒	No ☐	Depth (inches):	4	
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	surface	

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

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

Remarks:

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

Project Site: Lynnwood Link Extension   City/County: ML Terrace/Snohomish   Sampling Date: 3/29/12

Applicant/Owner: Sound Transit   State: WA   Sampling Point: WMT4-SP2

Investigator(s): M. Maynard, C. Worsley   Section, Township, Range: S32, T27N, R4E

Landform (hillslope, terrace, etc.): ____   Local relief (concave, convex, none): convex   Slope (%): 2

Subregion (LRR): A   Lat: 47.77988545100   Long: -122.31817586200   Datum: NAD83

Soil Map Unit Name: Urban Land   NWI classification: Upland

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

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

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

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

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

Remarks: **The sample plot is located approximately 6 feet west of the wall and approximately 25 feet east of WMT4-SP1. Heavy rains the previous night and light rain during the site investigation.**

VEGETATION – Use scientific names of plants

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10M)			
1. *Alnus rubra*	75	yes	FAC
2. ____			
3. ____			
4. ____			
50% = 37.5, 20% = 15	75	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Rubus spectabilis*	5	no	FAC
2. ____			
3. ____			
4. ____			
5. ____			
50% = 2.5, 20% = 1	5	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Polystichum munitum*	5	no	FACU
2. ____			
3. ____			
4. ____			
5. ____			
6. ____			
7. ____			
8. ____			
9. ____			
10. ____			
11. ____			
50% = 2.5, 20% = 1	5	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	85	yes	FACU
2. *Hedera helix*	2	no	FACU
50% = 43.5, 20% = 17.4	87	= Total Cover	
% Bare Ground in Herb Stratum ____			

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Species with 5% or less absolute coverage were not considered dominant. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WMT4-SP2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 3/2	100					Gr Sa Loam	Primarily large quarry spalls

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks: Quarry spalls associated with the retaining wall compose much of the substrate.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☐	Depth (inches):	_____
Water Table Present?	Yes ☒	No ☐	Depth (inches):	7
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	surface

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

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

Remarks: Much of the observed hydrology is likely associated with runoff from the wall.

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

Project Site: Lynnwood Link Extension   City/County: ML Terrace/Snohomish   Sampling Date: 04/03/12

Applicant/Owner: Sound Transit   State: WA   Sampling Point: WMT5-SP1

Investigator(s): M. Maynard, C. Worsley   Section, Township, Range: S29, T27N, R4E

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

Subregion (LRR): A   Lat: 47.80006460900   Long: -122.31539030600   Datum: NAD83

Soil Map Unit Name: Urban Land   NWI classification: PEM

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

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

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

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

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

Remarks: **The sample plot is located in emergent community in center of the open area.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	20	yes	FAC
2. _____			
3. _____			
4. _____			
50% = 10, 20% = 4	20	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Lonicera involucrata*	5	no	FAC
2. *Cornus sericea*	2	no	FACW
3. _____			
4. _____			
5. _____			
50% = 3.5, 20% = 1.4	7	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Juncus effusus*	70	yes	FACW
2. *Phalaris arundinacea*	50	yes	FACW
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = 60, 20% = 24	120	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	2	no	FACU
2. _____			
50% = 1, 20% = 0.4	2	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Species with 5% or less absolute coverage were not considered dominant. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WMT5-SP1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2						Sa Loam	
4-7	10Y 4/1	85	10YR 4/6	15	C	M	Cl Loam	
7-18	10Y 5/1	40	7.5YR 4/6	60	C	M	Gr Sa Loam	very sandy

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks: Inclusions in the 3rd layer (10YR 3/1 gravelly sandy loam). The two lower layers are very compacted.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	_____	
Water Table Present?	Yes ☒	No ☐	Depth (inches):	8	
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	surface	**Wetland Hydrology Present?** **Yes** ☒ **No** ☐

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

Remarks: There is standing water in adjacent micro-depressions.

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

Project Site: Lynnwood Link Extension City/County: ML Terrace/Snohomish Sampling Date: 04/03/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WMT5-SP2

Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S29, T27N, R4E

Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope (%): 40

Subregion (LRR): A Lat: 47.80008890100 Long: -122.31554498100 Datum: NAD83

Soil Map Unit Name: Urban Land NWI classification: Upland

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

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

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

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

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

Remarks: **The sample plot is located on the southbound I-5 off-ramp fill slope, west northwest of the wetland, approximately 25 feet soutwest of a Douglas fir.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	70	yes	FAC
2. *Pseudotsuga menzesii*	2	no	FACU
3. *Betula sp*	8	no	-
4.			
50% = 40, 20% = 16	80	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Forsythia sp. (ornamental)*	60	yes	NO
2. *Prunus emerginata (sapling)*	8	no	FACU
3.			
4.			
5.			
50% = 34, 20% = 13.6	68	= Total Cover	
Herb Stratum (Plot size: 2M)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = ____, 20% = ____		= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	50	yes	FACU
2.			
50% = 25, 20% = 10	50	= Total Cover	
% Bare Ground in Herb Stratum 80			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks: The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WMT5-SP2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 3/3	100					Sa Loam	
9-18	2.5Y 4/3	100					Gr Sa Loam	very sandy

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

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

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

Remarks: No primary or secoundary wetland hydrology indicators observed.

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

Project Site: Lynnwood Link Extension City/County: ML Terrace/Snohomish Sampling Date: 4/3/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WMT6-SP1

Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S29, T27N, R4E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): A Lat: 47.80057207800 Long: -122.31572022100 Datum: NAD83

Soil Map Unit Name: Urban Land NWI classification: PFO

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

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

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

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

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

Remarks: **Sample plot is located approximately 60 feet east of ROW fence near City Hall. Centrally in wetland, approximately 200 feet northeast of City Hall.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	70	yes	FAC
2. *Salix lucida*	35	yes	FACW
3. _____			
4. _____			
50% = 52.5, 20% = 21	105	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Rubus spectabilis*	30	yes	FAC
2. _____			
3. _____			
4. _____			
5. _____			
50% = 15, 20% = 6	30	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Equisetum telmateia*	55	yes	FACW
2. *Dryopteris expansa*	15	no	FACW
3. *Athyrium filix-femina*	20	yes	FAC
4. *Epilobium ciliatum*	2	no	FACW
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = 46, 20% = 18.4	92	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	10	yes	FACU
2. _____			
50% = 5, 20% = 2	10	= Total Cover	
% Bare Ground in Herb Stratum 50			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	83	(A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WMT6-SP1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 2/1	100					Si Loam	high organics
7-18	10G 5/1	100					Gr Sa Loam	very sandy

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type:

Depth (inches):

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	13
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	surface

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

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

Remarks: Water seeping throughout profile.

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

Project Site: Lynnwood Link Extension   City/County: ML Terrace/Snohomish   Sampling Date: 4/3/12

Applicant/Owner: Sound Transit   State: WA   Sampling Point: WMT6-SP2

Investigator(s): M. Maynard, C. Worsley   Section, Township, Range: S29, 27N, R4E

Landform (hillslope, terrace, etc.): _____   Local relief (concave, convex, none): none   Slope (%): 8

Subregion (LRR): A   Lat: 47.80053681300   Long: -122.31562003700   Datum: NAD83

Soil Map Unit Name: Urban Land   NWI classification: Upland

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

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

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

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

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

Remarks: **The sample plot is located approximately 30 feet east of WMT6-SP1 and 30 feet west of the I-5 off-ramp on a "ledge" of the fill slope.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	80	yes	FAC
2. *Pseudotsuga menzesii*	5	no	FACU
3. _____			
4. _____			
50% = 42.5, 20% = 17	85	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Rubus spectabilis*	5	no	FAC
2. _____			
3. _____			
4. _____			
5. _____			
50% = 2.5, 20% = 1	5	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = _____, 20% = _____	_____	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	60	yes	FACU
2. _____			
50% = 30, 20% = 12	60	= Total Cover	
% Bare Ground in Herb Stratum 80			

Dominance Test Worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: Species with 5% or less absolute coverage were not considered dominant. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WMT6-SP2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/2	100					Loam	trash in layer
5-18	2.5Y 5/3	100					Gr Sa Loam	very sandy, very compacted at 12 inches

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Remarks: No primary or secondary wetland hydrology indicators present.

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

Project Site: Lynnwood Link Extension City/County: ML Terrace/Snohomish Sampling Date: 4/3/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WMT7-SP1

Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S28, T27N, R4E

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

Subregion (LRR): A Lat: 47.80279636900 Long: -122.31334645800 Datum: NAD83

Soil Map Unit Name: Urban Land NWI classification: PFO

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

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** **Yes** ☒ **No** ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	

Remarks: **The sample plot is located on east side of the wetland, approximately 5 feet southeast of the right-of-way fence.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	30	yes	FAC
2. *Acer macrophyllum (overhanging from upland)*	75	n/a*	FACU
3. *Sorbus aucuparia (overhanging from upland)*	20	n/a*	NL (UPL)
4. *Prunus emarginata (overhanging from upland)*	10	n/a*	FACU
50% = 15, 20% = 6	30	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Rubus spectabilis*	75	yes	FAC
2. *Lonicera involucrata*	40	yes	FAC
3. _____	_____	____	____
4. _____	_____	____	____
5. _____	_____	____	____
50% = 57.5, 20% = 23	115	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. _____	_____	____	____
2. _____	_____	____	____
3. _____	_____	____	____
4. _____	_____	____	____
5. _____	_____	____	____
6. _____	_____	____	____
7. _____	_____	____	____
8. _____	_____	____	____
9. _____	_____	____	____
10. _____	_____	____	____
11. _____	_____	____	____
50% = _____, 20% = _____	_____	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	20	yes	FACU
2. _____	_____	____	____
50% = 10, 20% = 4	20	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	75	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x1 =	_____
FACW species	_____	x2 =	_____
FAC species	_____	x3 =	_____
FACU species	_____	x4 =	_____
UPL species	_____	x5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks: *excluded from calculations per chapter 2 guidance The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WMT7-SP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-10	10YR 2/1	100					mucky peat	partially/mostly decomposed organics
10-17	10YR 2/2	100					mucky peat	partially/mostly decomposed organics
17-26	10YR 3/1	100					Si Loam	organic matter inclusions

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☒ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	_____
Water Table Present?	Yes ☒	No ☐	Depth (inches):	2
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	surface

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Lynnwood Link Extension   City/County: ML Terrace/Snohomish   Sampling Date: 4/3/12
Applicant/Owner: Sound Transit   State: WA   Sampling Point: WMT7-SP2
Investigator(s): M. Maynard, C. Worsley   Section, Township, Range: S28, T27N, R4E
Landform (hillslope, terrace, etc.): ____   Local relief (concave, convex, none): ____   Slope (%): ____
Subregion (LRR): A   Lat: 47.80276315100   Long: -122.31324289400   Datum: NAD83
Soil Map Unit Name: Urban Land   NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐ No ☒	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	

Remarks: **The sample plot is located approximately 30 feet west of I-5 shoulder.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer macrophyllum*	70	yes	FACU
2. *Sorbus aucuparia*	5	no	NL (UPL)
3.			
4.			
50% = 37.5, 20% = 15	75	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Rubus spectabilis*	10	yes	FAC
2.			
3.			
4.			
5.			
50% = 5, 20% = 2	10	= Total Cover	
Herb Stratum (Plot size: 2M)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = ____, 20% = ____		= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	20	yes	FACU
2.			
50% = 10, 20% = 4	20	= Total Cover	
% Bare Ground in Herb Stratum 80			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	____	x1 =	____
FACW species	____	x2 =	____
FAC species	____	x3 =	____
FACU species	____	x4 =	____
UPL species	____	x5 =	____
Column Totals:	____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

☐ 1 – Rapid Test for Hydrophytic Vegetation
☐ 2 - Dominance Test is >50%
☐ 3 - Prevalence Index is ≤3.0[1]
☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
☐ 5 - Wetland Non-Vascular Plants[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks: The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WMT7-SP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/2	100					Loam	
5-16	2.5Y 5/4	60					Gr Sa Loam	very sandy
	5Y 4/1	40					Clay Loam	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	______
Water Table Present?	Yes ☐	No ☒	Depth (inches):	______
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches):	______

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary or secondary wetland hydrology indicators present.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Lynnwood Link Extension City/County: ML Terrace/Snohomish Sampling Date: 4/3/12
Applicant/Owner: Sound Transit State: WA Sampling Point: WMT8-SP1
Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S28, T27N, R4E
Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 4
Subregion (LRR): A Lat: 47.80610616900 Long: -122.30570086500 Datum: NAD83
Soil Map Unit Name: McKenna gravelly silt loam NWI classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** **Yes** ☒ **No** ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	

Remarks: **The sample plot is located east of I-5 and west of the apartment complex in a swale. Wetland is east of drainage (SMT4), separated by upland berm.**

VEGETATION – Use scientific names of plants

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10M)			
1. ______	______	______	______
2. ______	______	______	______
3. ______	______	______	______
4. ______	______	______	______
50% = ______, 20% = ______	______	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Rubus spectabilis*	20	yes	FAC
2. ______	______	______	______
3. ______	______	______	______
4. ______	______	______	______
5. ______	______	______	______
50% = 10, 20% = 4	20	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Athyrium filix femina*	40	yes	FACW
2. *Tolmiea menziesii*	5	no	FAC
3. *Equisetum telmateia*	5	no	FACW
4. *Lysichiton americanus*	15	yes	OBL
5. ______	______	______	______
6. ______	______	______	______
7. ______	______	______	______
8. ______	______	______	______
9. ______	______	______	______
10. ______	______	______	______
11. ______	______	______	______
50% = 32.5, 20% = 13	65	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	10	yes	FACU
2. ______	______	______	______
50% = 5, 20% = 2	10	= Total Cover	
% Bare Ground in Herb Stratum 40			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	______	(A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	______	x1 =	______
FACW species	______	x2 =	______
FAC species	______	x3 =	______
FACU species	______	x4 =	______
UPL species	______	x5 =	______
Column Totals:	______ (A)		______ (B)

Prevalence Index = B/A = ______

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is $\leq$3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks: The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WMT8-SP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/1	100					Loam	
5-9	5Y 4/1	70	2.5Y 4/3	30	C	M	Gr Sa Loam	Very sandy
9-19	10Y 4/1	90	10YR 3/4	10	C	M	Gr Sa Loam	Very sandy

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	_____
Water Table Present?	Yes ☒	No ☐	Depth (inches):	surface
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	surface

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Lynnwood Link Extension City/County: ML Terrace/Snohomish Sampling Date: 4/3/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WMT8-SP2

Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S28, T27N, R4E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): convex Slope (%): 2

Subregion (LRR): A Lat: 47.80613061100 Long: -122.30573064100 Datum: NAD83

Soil Map Unit Name: McKenna gravelly silt loam NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐ No ☒	**Is the Sampled Area within a Wetland?**	**Yes** ☐ **No** ☒
Hydric Soil Present?	Yes ☐ No ☒		
Wetland Hydrology Present?	Yes ☐ No ☒		

Remarks: **The sample plot is located on the berm between WMT8 and the drainage (SMT4), west of the wetland.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pseudotsuga menzesii*	20	yes	FACU
2. *Sorbus aucuparia*	15	yes	NL (UPL)
3. _____	_____	____	____
4. ____	_____	____	____
50% = 17.5, 20% = 7	35	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Oemleria cerasiformis*	20	yes	FACU
2. _____	_____	____	____
3. _____	_____	____	____
4. _____	_____	____	____
5. _____	_____	____	____
50% = 10, 20% = 4	20	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Equisetum telmateia*	60	yes	FACW
2. _____	_____	____	____
3. _____	_____	____	____
4. _____	_____	____	____
5. _____	_____	____	____
6. _____	_____	____	____
7. _____	_____	____	____
8. _____	_____	____	____
9. _____	_____	____	____
10. _____	_____	____	____
11. _____	_____	____	____
50% = 30, 20% = 12	60	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	70	yes	FACU
2. _____	_____	____	____
50% = 35, 20% = 14	70	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	20	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x1 =	_____
FACW species	_____	x2 =	_____
FAC species	_____	x3 =	_____
FACU species	_____	x4 =	_____
UPL species	_____	x5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks: The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WMT8-SP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/2	100					Sa Loam	
5-17	2.5Y 5/3	100					Gr Sand	
17-20	5Y 4/2	75	7.5YR 3/4	25	C	M	Gr Sa Loam	Very sandy

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):		
Water Table Present?	Yes ☐	No ☒	Depth (inches):	13	
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches):	13	**Wetland Hydrology Present?** **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Depth of free water in pit is 19 inches. Water seeping in to pit at 13 inches. .

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Lynnwood Link Extension City/County: Lynnwood/Snohomish Sampling Date: 4/5/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WLY3-SP1

Investigator(s): M. Maynard Section, Township, Range: S21, T27N, R4E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): A Lat: 47.80787823300 Long: -122.30477705600 Datum: NAD83

Soil Map Unit Name: UrbanLand NWI classification: PSS

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?**	**Yes** ☒ **No** ☐
Hydric Soil Present?	Yes ☒ No ☐		
Wetland Hydrology Present?	Yes ☒ No ☐		

Remarks: **The sample plot is located in a hardhack patch near the center of the wetland.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pseudotsuga menziesii (overhanging from buffer)*	40	n/a*	FACU
2. _____			
3. _____			
4. _____			
50% = _____, 20% = _____	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Spiraea douglasii*	90	yes	FACW
2. _____			
3. _____			
4. _____			
5. _____			
50% = 45, 20% = 18	90	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = _____, 20% = _____	_____	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	5	no	FACU
2. _____			
50% = 2.5, 20% = 1	5	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x1 =	_____
FACW species	_____	x2 =	_____
FAC species	_____	x3 =	_____
FACU species	_____	x4 =	_____
UPL species	_____	x5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks: *excluded from calculations per chapter 2 guidance Species with 5% or less absolute coverage were not considered dominant. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WLY3-SP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-20	10YR 2/1	100					Si Loam	high organic content

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☒ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):		
Water Table Present?	Yes ☒	No ☐	Depth (inches):	surface	
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	surface	**Wetland Hydrology Present?** **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Lynnwood Link Extension City/County: Lynnwood/Snohomish Sampling Date: 4/5/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WLY3-SP2

Investigator(s): M. Maynard, C. Worsley Section, Township, Range: S21, T27N, R4E

Landform (hillslope, terrace, etc.): ____ Local relief (concave, convex, none): convex Slope (%): 15

Subregion (LRR): A Lat: 47.80783324500 Long: -122.30471790300 Datum: NAD83

Soil Map Unit Name: Urban Land NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐ No ☒	**Is the Sampled Area within a Wetland?**	**Yes** ☐ **No** ☒
Hydric Soil Present?	Yes ☐ No ☒		
Wetland Hydrology Present?	Yes ☐ No ☒		

Remarks: **The sample plot is located approximately 8 feet northeast, upslope of the trash trap.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pdeudotsuga menzesii*	45	yes	FACU
2. *Acer macrophyllum*	20	yes	FACU
3. *Populus balsamifera*	20	yes	FAC
4. ____			
50% = 42.5, 20% = 17	85	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. ____			
2. ____			
3. ____			
4. ____			
5. ____			
50% = ____, 20% = ____	____	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Ranunculus repens*	2	no	FACW
2. ____			
3. ____			
4. ____			
5. ____			
6. ____			
7. ____			
8. ____			
9. ____			
10. ____			
11. ____			
50% = 1, 20% = 0.4	2	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	10	yes	FACU
2. *Hedera helix*	5	no	NL (UPL)
50% = 7.5, 20% = 3	15	= Total Cover	
% Bare Ground in Herb Stratum 80			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	25	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	____	x1 =	____
FACW species	____	x2 =	____
FAC species	____	x3 =	____
FACU species	____	x4 =	____
UPL species	____	x5 =	____
Column Totals:	____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤ 3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☐ **No** ☒

Remarks: Species with 5% or less absolute coverage were not considered dominant. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WLY3-SP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-10	10YR 2/1	100					Sa Loam	
10-18	2.5Y 4/4	100					Gr Cl Loam	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):		
Water Table Present?	Yes ☐	No ☒	Depth (inches):		
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches):		

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary or secondary wetland hydrology indicators present.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Lynnwood Link Extension | City/County: Lynnwood/Snohomish | Sampling Date: 4/9/12

Applicant/Owner: Sound Transit | State: WA | Sampling Point: WLY4-SP1

Investigator(s): M. Maynard | Section, Township, Range: S21, T27N, R4E

Landform (hillslope, terrace, etc.): _____ | Local relief (concave, convex, none): concave | Slope (%): 0

Subregion (LRR): A | Lat: 47.81675583500 | Long: -122.30002669800 | Datum: NAD83

Soil Map Unit Name: McKenna Gravelly Silt Loam | NWI classification: PEM fringe

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?** **Yes** ☒ **No** ☐
Hydric Soil Present?	Yes ☒	No ☐	
Wetland Hydrology Present?	Yes ☒	No ☐	

Remarks: **The sample plot is located east of the parking lot, approximately 20 feet west of Scriber Creek in reed canarygrass.**

VEGETATION – Use scientific names of plants

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10M)			
1. *Populus balsamifera*	30	yes	FAC
2. _____			
3. _____			
4. _____			
50% = 15, 20% = 6	30	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Salix lucida*	10	yes	FACW
2. *Cornus sericea*	25	yes	FACW
3. _____			
4. _____			
5. _____			
50% = 17.5, 20% = 7	35	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Phalaris arundinacea*	75	yes	FACW
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = 37.5, 20% = 15	75	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. _____			
2. _____			
50% = _____, 20% = _____	_____	= Total Cover	
% Bare Ground in Herb Stratum 10			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x1 =	_____
FACW species	_____	x2 =	_____
FAC species	_____	x3 =	_____
FACU species	_____	x4 =	_____
UPL species	_____	x5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WLY4-SP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 2/1						Mu Silt	with high organic content

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☒ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks: Organics are at various stages of decomposition

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

	Yes		No		Depth (inches):
Surface Water Present?	Yes	☐	No	☒	_____
Water Table Present?	Yes	☒	No	☐	3
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	surface

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Lynnwood Link Extension   City/County: Lynnwood/Snohomish   Sampling Date: 4/9/12

Applicant/Owner: Sound Transit   State: WA   Sampling Point: WLY4-SP2

Investigator(s): M. Maynard   Section, Township, Range: S21, T27N, R4E

Landform (hillslope, terrace, etc.): _____   Local relief (concave, convex, none): concave   Slope (%): 1

Subregion (LRR): A   Lat: 47.81685512600   Long: -122.30019184700   Datum: NAD83

Soil Map Unit Name: McKenna Gravelly Silt Loam   NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes** ☐ **No** ☒
Hydric Soil Present?	Yes ☐	No ☐		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: **The sample plot is located near the base of a large black cottonwood, approximately 45 feet northwest of WLY4-SP1.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus balsamifera*	50	yes	FAC
2. *Pseudotsuga menzesii*	20	yes	FACU
3. *Alnus rubra*	10	no	FAC
4. *Malus sp.*	15	no	NL (UPL)
50% = 42.5, 20% = 17	95	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Cornus sericea*	5	no	FACW
2. *Ilex aquifolium*	5	no	NL (UPL)
3. *Prunus lusitanica*	10	yes	NL (UPL)
4. _____			
5. _____			
50% = 10, 20% = 4	20	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = _____, 20% = _____	_____	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Hedera helix*	80	yes	NL (UPL)
2. *Rubus armeniacus*	70	yes	FACU
50% = 75, 20% = 30	150	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	20	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x1 =	_____
FACW species	_____	x2 =	_____
FAC species	_____	x3 =	_____
FACU species	_____	x4 =	_____
UPL species	_____	x5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☐ **No** ☒

Remarks: Species with 5% or less absolute coverage were not considered dominant. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WLY4-SP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/1	100					Loam	
14-18	10YR 3/2	100					Loam	w. cobbles

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? **Yes** ☐ **No** ☐

Remarks: Concrete rubble throughout area.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

	Yes		No		Depth (inches):
Surface Water Present?	Yes	☐	No	☒	Depth (inches): _____
Water Table Present?	Yes	☐	No	☒	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches): _____

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary or secondary wetland hydrology indicators present.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Lynnwood Link Extension City/County: Lynnwood/Snohomish Sampling Date: 4/17/12

Applicant/Owner: Sound Transit State: WA Sampling Point: WLY6-SP1

Investigator(s): M. Maynard Section, Township, Range: S21, T27N, R4E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): A Lat: 47.81175844700 Long: -122.29768042500 Datum: NAD83

Soil Map Unit Name: Urban Land NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** **Yes** ☒ **No** ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	

Remarks: **The sample plot is located in the southwest portion of the wetland, approximately 30 feet east of 208th St SW.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix lucida*	90	yes	FACW
2. *Alnus rubra*	15	no	FAC
3. _____			
4. _____			
50% = 52.5, 20% = 21	105	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. *Lonicera involucrata*	60	yes	FAC
2. _____			
3. _____			
4. _____			
5. _____			
50% = 30, 20% = 12	60	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Carex sp.*	2	no	-
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = 1, 20% = 0.4	2	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	10	yes	FACU
2. _____			
50% = 5, 20% = 2	10	= Total Cover	

% Bare Ground in Herb Stratum _____

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	66	(A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	_____	x1 =	_____
FACW species	_____	x2 =	_____
FAC species	_____	x3 =	_____
FACU species	_____	x4 =	_____
UPL species	_____	x5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is $\leq$3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks: Species with 5% or less absolute coverage were not considered dominant. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WLY6-SP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1	80	5YR 4/6	20	C	M	Si Loam	
4-9	5Y 4/1	60	7.5YR 4/6	40	C	M	Cl Loam	
9-18	5Y 4/1	80	7.5YR 4/6	20	C	M	Cl Loam	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	____
Water Table Present?	Yes ☒	No ☐	Depth (inches):	2
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches):	surface

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site:	Lynnwood Link Extension	City/County:	Lynnwood/Snohomish	Sampling Date:	4/17/12
Applicant/Owner:	Sound Transit	State:	WA	Sampling Point:	WLY6-SP2
Investigator(s):	M. Maynard	Section, Township, Range:	S21, T27N, R4E		
Landform (hillslope, terrace, etc.):	_____	Local relief (concave, convex, none):	convex	Slope (%):	3
Subregion (LRR):	A	Lat: 47.81164518500	Long: -122.29775300300	Datum:	NAD83
Soil Map Unit Name:	Urban Land			NWI classification:	Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?**	**Yes** ☐ **No** ☒
Hydric Soil Present?	Yes ☐ No ☒		
Wetland Hydrology Present?	Yes ☐ No ☒		

Remarks: **The sample plot is located southwest of the wetland , approximately 10 feet east of 208th St SW. At edge of maintained grass ROW for 208th St SW.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 10M)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
50% = _____, 20% = _____	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5M)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
50% = _____, 20% = _____	_____	= Total Cover	
Herb Stratum (Plot size: 2M)			
1. *Holcus lanatus*	40	yes	FAC
2. *Cardamine oligosperma*	20	yes	FAC
3. *Dactylis glomerata*	15	no	FACU
4. *Taraxacum officinale*	2	no	FACU
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = 38.5, 20% = 15.4	77	= Total Cover	
Woody Vine Stratum (Plot size: 5M)			
1. *Rubus armeniacus*	45	yes	FACU
2. _____			
50% = 22.5, 20% = 9	45	= Total Cover	
% Bare Ground in Herb Stratum 5			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	66	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x1 =	_____
FACW species	_____	x2 =	_____
FAC species	_____	x3 =	_____
FACU species	_____	x4 =	_____
UPL species	_____	x5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks: Grass is mowed/maintained. The 1988 Region 9 National Wetland Plant List and 1993 Supplement were used for this delineation.

Project Site: Lynnwood Link Extension

SOIL

Sampling Point: WLY6-SP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 2/1	100					Loam	
14-18	10YR 3/2	100					Gr Sa Loam	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches): _____		
Water Table Present?	Yes ☐	No ☒	Depth (inches): _____		
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): _____		

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary or secondary wetland hydrology indicators present.

APPENDIX D

Wetland Rating Forms

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WSE1 Date of site visit: 3/9/2012

Rated by: M Maynard Trained by Ecology? Yes X No ______ Date of training: 04/06

SEC: 29 TWNSHP: 26N RNGE: 4E Is S/T/R in Appendix D? Yes ________ No X ___

Map of wetland unit: Figure______________ Estimated size_____________

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I___________ II___________ III___X______ IV__________

Category I =	Score > 70	Score for Water Quality Functions	16
Category II =	Score 51 - 69	Score for Hydrologic Functions	16
Category III =	Score 30 – 50	Score for Habitat Functions	8
Category IV =	Score < 30	TOTAL Score for Functions	40

Category based on SPECIAL CHARACTERISTCS of Wetland I_________ II_________ Does not apply___X______

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	
Natural Heritage Wetland		Riverine	X
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	**YES**	**NO**
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

<u>To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.</u>

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is a Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual)*.
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

R	Riverine and Freshwater Tidal Fringe Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
R 1	**Does the wetland have the potential to improve water quality?** *(see p.52)*	
	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: • Depressions cover > 3/4 area of wetland ..... points = 8 • Depressions cover > 1/2 area of wetland ..... points = 4 **(If depressions > 1/2 of area of unit draw polygons on aerial photo or map)** • Depressions present but cover < 1/2 area of wetland. ..... points = 2 • No depressions present ..... points = 0	**Figure ___** 0
	R 1.2 Characteristics of the vegetation in the unit (areas with >90% cover at person height): • Trees or shrubs > 2/3 area of the unit ..... points = 8 • Trees or shrubs > 1/3 area of the wetland ..... points = 6 • Ungrazed, herbaceous plants > 2/3 area of unit ..... points = 6 • Ungrazed herbaceous plants > 1/3 area of unit ..... points = 3 • Trees, shrubs, and ungrazed herbaceous < 1/3 area of unit ..... points = 0 **Aerial photo or map showing polygons of different vegetation types**	**Figure ___** 8
	Add the points in the boxes above	8
R 2	**Does the wetland have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __X__ Residential, urban areas, golf courses are within 150 ft. of wetland ____ The river or stream linked to the wetland has a contributing basin where human activities have raised levels of sediment, toxic compounds or nutrients in the river water above standards for water quality. ____ Other ____ YES multiplier is 2 NO multiplier is 1	*(see p. 53)* Multiplier 2
◆	**TOTAL – Water Quality Functions** Multiply the score from R1 by R2; then ***add score to table on p. 1***	16
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.	
R 3	**Does the wetland have the potential to reduce flooding and erosion?**	*(see p.54)*
	R 3.1 Characteristics of the overbank storage the wetland provides: *Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of unit) / (average width of stream between banks).* • If the ratio is more than 20 ..... points = 9 • If the ratio is between 10 – 20 ..... points = 6 • If the ratio is 5- <10 ..... points = 4 • If the ratio is 1- <5 ..... points = 2 • If the ratio is < 1 ..... points = 1 **Aerial photo or map showing average widths**	**Figure ___** 1
	R 3.2 Characteristics of vegetation that slow down water velocities during floods: *Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description. (polygons need to have >90% cover at person height NOT Cowardin classes):* • Forest or shrub for > 1/3 area OR herbaceous plants > 2/3 area ..... points = 7 • Forest or shrub for > 1/10 area OR herbaceous plants > 1/3 area ..... points = 4 • Vegetation does not meet above criteria ..... points = 0 **Aerial photo or map showing polygons of different vegetation types**	**Figure ___** 7
	Add the points in the boxes above	8
R 4	**Does the wetland have the opportunity to reduce flooding and erosion?** Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. *Note which of the following conditions apply.* __X__ There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding. ____ There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding ____ Other ____ *(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike)* YES multiplier is 2 NO multiplier is 1	*(see p.57)* Multiplier 2
◆	**TOTAL – Hydrologic Functions** Multiply the score from R3 by R4; then ***add score to table on p. 1***	16

Comments:

These questions apply to wetlands of all HGM classes. **Points** (only 1 score per box)

HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.

H 1 Does the wetland have the potential to provide habitat for many species?

H 1.1 Vegetation structure *(see P. 72)*: **Figure ___**

Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.

____ Aquatic Bed
____ Emergent plants
____ Scrub/shrub (areas where shrubs have > 30% cover)
__X_ Forested (areas where trees have > 30% cover)

If the unit has a forested class check if:

____ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon.

Add the number of vegetation types that qualify. If you have: **Map of Cowardin vegetation classes**

4 structures or more....... points = 4
3 structures.................. points = 2
2 structures................... points = 1
1 structure .... points = 0

0

H 1.2 Hydroperiods *(see p.73)*: **Figure ___**

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).

____ Permanently flooded or inundated
__X_ Seasonally flooded or inundated
__X_ Occasionally flooded or inundated
____ Saturated only
____ Permanently flowing stream or river in, or adjacent to, the wetland
X___ Seasonally flowing stream in, or adjacent to, the wetland
____ **Lake-fringe wetland................. = 2 points**
____ **Freshwater tidal wetland......... = 2 points**

4 or more types present points = 3
3 or more types present......points = 2
2 types present..................points = 1
1 type present ....points = 0

Map of hydroperiods

2

H 1.3 Richness of Plant Species *(see p. 75)*:

Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*

You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.

If you counted:
> 19 species .... points = 2
5 – 19 species.................... points = 1
< 5 species .... points = 0

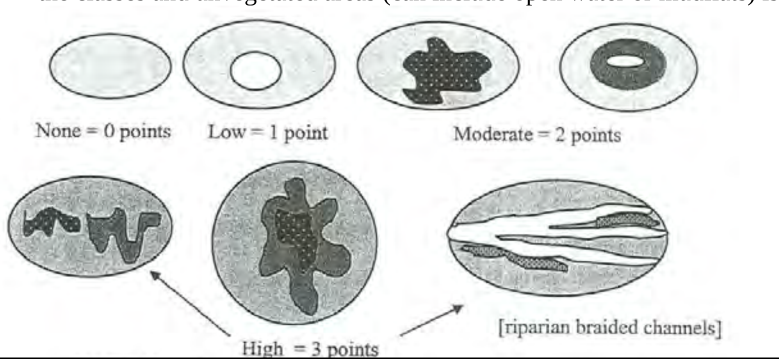
List species below if you want to:

____
____
____
____

1

H 1.4 Interspersion of Habitats *(see p. 76)*: **Figure ___**

Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

0

H 1.5 Special Habitat Features *(see p. 77)*:

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
____ Standing snags (diameter at the bottom > 4 inches) in the wetland
____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
____ Invasive plants cover less than 25% of the wetland area in each stratum of plants
NOTE: The 20% stated in early printings of the manual on page 78 is an error.

0

H 1 TOTAL Score – potential for providing habitat *Add the points in the column above* **3**

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ **points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference....... **points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference....... **points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference....... **points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .... **points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .... **points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK....... **points = 2** ____ Heavy grazing in buffer .... **points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)....... **points = 0** __X_ Buffer does not meet any of the criteria above .... **points = 1** **Arial photo showing buffers**	**Figure ___** 1
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	0

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). __X__ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	1
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile..........points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile..........points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	5
	TOTAL for H 1 from page 8	3
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	8

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D ________ or accessed from WNHP/DNR web site ________ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ________ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO __X__ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cove*r)? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X__ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WSE2 Date of site visit: 03/12/12

Rated by: M Maynard Trained by Ecology? Yes X No ____ Date of training: 04/06

SEC: 29 TWNSHP: 26N RNGE: 4E Is S/T/R in Appendix D? Yes ____ No X

Map of wetland unit: Figure ______ Estimated size ______

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I ____ II ____ III ____ IV X

Category I =	Score > 70	Score for Water Quality Functions	6
Category II =	Score 51 - 69	Score for Hydrologic Functions	10
Category III =	Score 30 – 50	Score for Habitat Functions	11
Category IV =	Score < 30	TOTAL Score for Functions	27

Category based on SPECIAL CHARACTERISTCS of Wetland I ____ II ____ Does not apply X

Final Category (choose the "highest" category from above") IV

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection **(in addition to the protection recommended for its category)**	**YES**	**NO**
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

<u>To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.</u>

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is a Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual).*
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the potential to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) .... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet .... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) .... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure** ___ 2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area .... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area .... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area .... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area .... points = 0 **Map of Cowardin vegetation classes**	**Figure** ___ 1
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland .... points = 4 • Area seasonally ponded is > 1/4 total area of wetland .... points = 2 • Area seasonally ponded is < 1/4 total area of wetland .... points = 0 **Map of Hydroperiods**	**Figure** ___ 0
	Total for D 1 *Add the points in the boxes above*	3
D 2	**Does the wetland have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __X__ Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other ____ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier 2
◆	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	6
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the potential to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) .... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet .... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .... points = 0	2
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet .... points = 7 • The wetland is a "headwater" wetland .... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet .... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet .... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft .... points = 0	5
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit .... points = 5 • The area of the basin is 10 to 100 times the area of the unit .... points = 3 • The area of the basin is more than 100 times the area of the unit .... points = 0 • Entire unit is in the FLATS class .... points = 5	3
	Total for D 3 *Add the points in the boxes above*	10

D 4	**Does the wetland have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. ____ Wetland drains to a river or stream that has flooding problems ____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other ____________________ YES multiplier is 2 NO multiplier is 1	*(see p. 49)* Multiplier 1 _______
◆	**TOTAL – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	10

Comments:

These questions apply to wetlands of all HGM classes.	Points (only 1 score per box)
HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	

H 1 Does the wetland have the potential to provide habitat for many species?

H 1.1 Vegetation structure *(see P. 72)*:
Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.
__X__ Aquatic Bed
X___ Emergent plants
__X__ Scrub/shrub (areas where shrubs have > 30% cover)
____ Forested (areas where trees have > 30% cover)
If the unit has a forested class check if:
____ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon.
Add the number of vegetation types that qualify. If you have: **Map of Cowardin vegetation classes**
4 structures or more....... points = 4
3 structures.................. points = 2
2 structures................... points = 1
1 structure .... points = 0

Figure ___ — Points: 2

H 1.2 Hydroperiods *(see p.73)*:
Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).
__X__ Permanently flooded or inundated — 4 or more types present points = 3
__X__ Seasonally flooded or inundated — 3 or more types present...... points = 2
____ Occasionally flooded or inundated — 2 types present.................. points = 1
____ Saturated only — 1 type present .... points = 0
____ Permanently flowing stream or river in, or adjacent to, the wetland
____ Seasonally flowing stream in, or adjacent to, the wetland
____ **Lake-fringe wetland................. = 2 points**
____ **Freshwater tidal wetland......... = 2 points** **Map of hydroperiods**

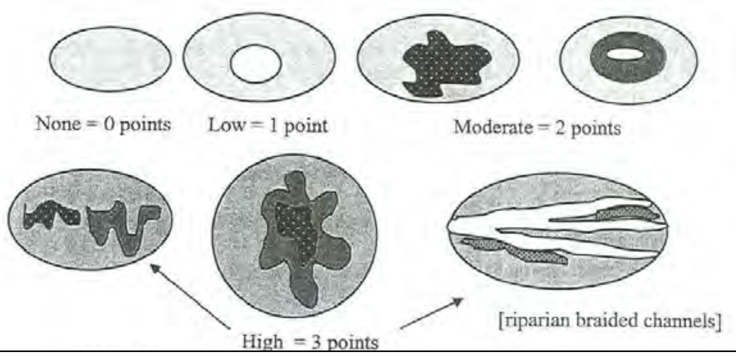
Figure ___ — Points: 1

H 1.3 Richness of Plant Species *(see p. 75)*:
Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*
You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted:
> 19 species .... points = 2
5 – 19 species.................... points = 1
< 5 species .... points = 0

List species below if you want to:
____
____
____
____

Points: 1

H 1.4 Interspersion of Habitats *(see p. 76)*:
Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

Figure ___ — Points: 1

H 1.5 Special Habitat Features *(see p. 77)*:
Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.
____ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
____ Standing snags (diameter at the bottom > 4 inches) in the wetland
____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
__X__ Invasive plants cover less than 25% of the wetland area in each stratum of plants
NOTE: The 20% stated in early printings of the manual on page 78 is an error.

Points: 1

H 1 TOTAL Score – potential for providing habitat *Add the points in the column above* — 6

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ **points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference.......... **points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference.......... **points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference.......... **points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .... **points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .... **points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK.......... **points = 2** ____ Heavy grazing in buffer .... **points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland).......... **points = 0** __X_ Buffer does not meet any of the criteria above .... **points = 1** **Arial photo showing buffers**	**Figure ___** 1
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	0

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). __X_ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	1
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ......points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ......points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ......points = 3 • There is at least 1 wetland within 1/2 mile ......points = 2 • There are no wetlands within 1/2 mile......points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	5
	TOTAL for H 1 from page 8	6
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	11

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D _______ or accessed from WNHP/DNR web site _______ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO _______ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ___X___ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cove*r)? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X_ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WSE3 Date of site visit: 3/14/12

Rated by: M Maynard Trained by Ecology? Yes X No____ Date of training: 04/06

SEC: 20 TWNSHP: 26N RNGE: 4E Is S/T/R in Appendix D? Yes______ No X

Map of wetland unit: Figure__________ Estimated size__________

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I_______ II_______ III X IV_______

Category I =	Score > 70	Score for Water Quality Functions	14
Category II =	Score 51 - 69	Score for Hydrologic Functions	10
Category III =	Score 30 – 50	Score for Habitat Functions	9
Category IV =	Score < 30	TOTAL Score for Functions	33

Category based on SPECIAL CHARACTERISTCS of Wetland I_______ II_______ Does not apply X

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	X

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection **(in addition to the protection recommended for its category)**	**YES**	**NO**
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ___X__ The wetland is on a slope *(slope can be very gradual).*
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the <u>potential</u> to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) .... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet .... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) .... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure ___** 2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area .... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area .... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area .... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area .... points = 0 **Map of Cowardin vegetation classes**	**Figure ___** 3
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland .... points = 4 • Area seasonally ponded is > 1/4 total area of wetland .... points = 2 • Area seasonally ponded is < 1/4 total area of wetland .... points = 0 **Map of Hydroperiods**	**Figure ___** 2
	Total for D 1 *Add the points in the boxes above*	7
D 2	**Does the wetland have the <u>opportunity</u> to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __X_ Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other ____________ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier <u>2</u> ________
◆	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	14
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the <u>potential</u> to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) .... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet .... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .... points = 0	2
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet .... points = 7 • The wetland is a "headwater" wetland .... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet .... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet .... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft .... points = 0	0
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit .... points = 5 • The area of the basin is 10 to 100 times the area of the unit .... points = 3 • The area of the basin is more than 100 times the area of the unit .... points = 0 • Entire unit is in the FLATS class .... points = 5	3
	Total for D 3 *Add the points in the boxes above*	5

D 4	**Does the wetland have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. X___ Wetland drains to a river or stream that has flooding problems ____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other ________________ YES multiplier is 2 NO multiplier is 1	*(see p. 49)* Multiplier 2
◆	**TOTAL – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	10

Comments:

Wetland name or number WSE3 ________

These questions apply to wetlands of all HGM classes.	Points
HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 score per box)

H 1 Does the wetland have the potential to provide habitat for many species?

H 1.1 Vegetation structure *(see P. 72)*:

Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.

____ Aquatic Bed
__X__ Emergent plants
____ Scrub/shrub (areas where shrubs have > 30% cover)
__X__ Forested (areas where trees have > 30% cover)

If the unit has a forested class check if:

____ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon.

Add the number of vegetation types that qualify. If you have: **Map of Cowardin vegetation classes**

4 structures or more .... points = 4
3 structures .... points = 2
2 structures .... points = 1
1 structure .... points = 0

Figure ___ 1

H 1.2 Hydroperiods *(see p.73)*:

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).

____ Permanently flooded or inundated — 4 or more types present points = 3
X___ Seasonally flooded or inundated — 3 or more types present...... points = 2
____ Occasionally flooded or inundated — 2 types present.................. points = 1
X___ Saturated only — 1 type present .... points = 0
____ Permanently flowing stream or river in, or adjacent to, the wetland
____ Seasonally flowing stream in, or adjacent to, the wetland
____ **Lake-fringe wetland .... = 2 points**
____ **Freshwater tidal wetland .... = 2 points** **Map of hydroperiods**

Figure ___ 1

H 1.3 Richness of Plant Species *(see p. 75)*:

Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*

You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted:

> 19 species .... points = 2
5 – 19 species.................... points = 1
< 5 species .... points = 0

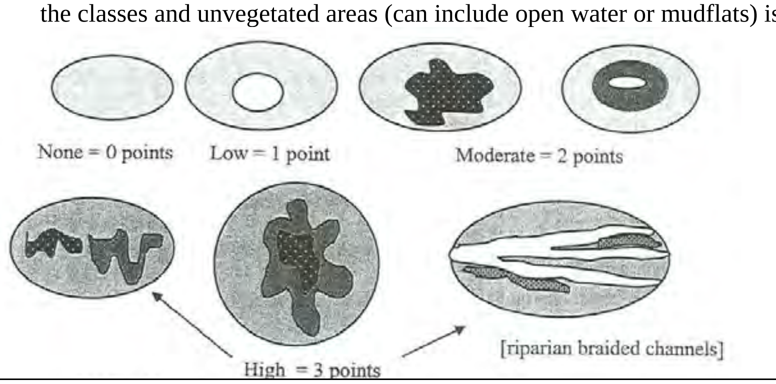
List species below if you want to:

____
____
____
____

1

H 1.4 Interspersion of Habitats *(see p. 76)*:

Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

Figure ___ 1

H 1.5 Special Habitat Features *(see p. 77)*:

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
____ Standing snags (diameter at the bottom > 4 inches) in the wetland
____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
____ Invasive plants cover less than 25% of the wetland area in each stratum of plants
NOTE: The 20% stated in early printings of the manual on page 78 is an error.

0

H 1 TOTAL Score – potential for providing habitat *Add the points in the column above* 4

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ **points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference........ **points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference........ **points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference........ **points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .... **points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .... **points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK........ **points = 2** ____ Heavy grazing in buffer .... **points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)........ **points = 0** __X__ Buffer does not meet any of the criteria above .... **points = 1** **Arial photo showing buffers**	**Figure ___** 1
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	0

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. (Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). _X__ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	1
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile....................points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	5
	TOTAL for H 1 from page 8	4
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	9

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D _______ or accessed from WNHP/DNR web site _______ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO _______ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ___X___ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cove*r)? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X__ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WSE4 Date of site visit: 3/14/12

Rated by: M Maynard Trained by Ecology? Yes X No ___ Date of training: 04/06

SEC: 20 TWNSHP: 26N RNGE: 4E Is S/T/R in Appendix D? Yes ___ No X

Map of wetland unit: Figure___________ Estimated size___________

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I_______ II_______ III X IV_______

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	14
Score for Hydrologic Functions	16
Score for Habitat Functions	8
TOTAL Score for Functions	38

Category based on SPECIAL CHARACTERISTCS of Wetland I_______ II_______ Does not apply X

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics	
Estuarine	
Natural Heritage Wetland	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	X

Wetland HGM Class used for Rating	
Depressional	X
Riverine	
Lake-fringe	
Slope	
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	**YES**	**NO**
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

<u>To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.</u>

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is a Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual).*
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the <u>potential</u> to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) .... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet .... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) .... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure ___** 2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area .... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area .... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area .... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area .... points = 0 **Map of Cowardin vegetation classes**	**Figure ___** 3
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland .... points = 4 • Area seasonally ponded is > 1/4 total area of wetland .... points = 2 • Area seasonally ponded is < 1/4 total area of wetland .... points = 0 **Map of Hydroperiods**	**Figure ___** 2
	Total for D 1 *Add the points in the boxes above*	7
D 2	**Does the wetland have the <u>opportunity</u> to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging _X_ Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other ____________ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier 2
◆	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	14
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the <u>potential</u> to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) .... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet .... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .... points = 0	2
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet .... points = 7 • The wetland is a "headwater" wetland .... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet .... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet .... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft .... points = 0	3
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit .... points = 5 • The area of the basin is 10 to 100 times the area of the unit .... points = 3 • The area of the basin is more than 100 times the area of the unit .... points = 0 • Entire unit is in the FLATS class .... points = 5	3
	Total for D 3 *Add the points in the boxes above*	8

D 4	**Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. X___ Wetland drains to a river or stream that has flooding problems ____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other ____ YES multiplier is 2 NO multiplier is 1	*(see p. 49)* Multiplier 2 ________
◆	**<u>TOTAL</u> – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	16

Comments:

These questions apply to wetlands of all HGM classes.	**Points**
HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 score per box)

H 1 Does the wetland have the <u>potential</u> to provide habitat for many species?

H 1.1 <u>Vegetation structure</u> *(see P. 72)*: — **Figure ___**

Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.

____ Aquatic Bed
____ Emergent plants
____ Scrub/shrub (areas where shrubs have > 30% cover)
__X__ Forested (areas where trees have > 30% cover)

If the unit has a forested class check if:

X___ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon.

Add the number of vegetation types that qualify. If you have: **Map of Cowardin vegetation classes**

4 structures or more....... points = 4
3 structures.................. points = 2
2 structures................... points = 1
1 structure .... points = 0

Points: 1

H 1.2 <u>Hydroperiods</u> *(see p.73)*: — **Figure ___**

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).

____ Permanently flooded or inundated
__X__ Seasonally flooded or inundated
____ Occasionally flooded or inundated
_X_ Saturated only
____ Permanently flowing stream or river in, or adjacent to, the wetland
____ Seasonally flowing stream in, or adjacent to, the wetland
____ **Lake-fringe wetland................. = 2 points**
____ **Freshwater tidal wetland......... = 2 points**

4 or more types present points = 3
3 or more types present......points = 2
2 types present..................points = 1
1 type present ....points = 0

Map of hydroperiods

Points: 1

H 1.3 <u>Richness of Plant Species</u> *(see p. 75)*:

Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*

You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.

If you counted:
> 19 species .... points = 2
5 – 19 species.................... points = 1
< 5 species .... points = 0

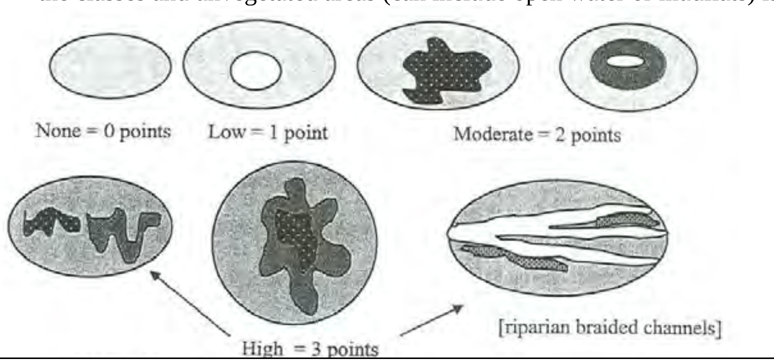
List species below if you want to:

____
____
____
____

Points: 1

H 1.4 Interspersion of Habitats *(see p. 76)*: — **Figure ___**

Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

Points: 0

H 1.5 <u>Special Habitat Features</u> *(see p. 77)*:

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
____ Standing snags (diameter at the bottom > 4 inches) in the wetland
____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
____ Invasive plants cover less than 25% of the wetland area in each stratum of plants
NOTE: The 20% stated in early printings of the manual on page 78 is an error.

Points: 0

H 1 TOTAL Score – potential for providing habitat *Add the points in the column above* — **3**

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ **points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference .... **points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference .... **points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference .... **points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .... **points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .... **points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK........ **points = 2** ____ Heavy grazing in buffer .... **points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)........ **points = 0** __X__ Buffer does not meet any of the criteria above .... **points = 1** **Arial photo showing buffers**	**Figure ___** 1
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	0

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). _X___ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	1
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile..........points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	5
	TOTAL for H 1 from page 8	3
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	8

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D ________ or accessed from WNHP/DNR web site ________ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ________ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ____X__ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cove*r)? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X_ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WSE5 Date of site visit: 3/19/12

Rated by: M Maynard Trained by Ecology? Yes X No ___ Date of training: 04/06

SEC: 20 TWNSHP: 26N RNGE: 4E Is S/T/R in Appendix D? Yes ___ No X

Map of wetland unit: Figure ___ Estimated size ___

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I ___ II ___ III X IV ___

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	14
Score for Hydrologic Functions	10
Score for Habitat Functions	10
TOTAL Score for Functions	34

Category based on SPECIAL CHARACTERISTCS of Wetland I ___ II ___ Does not apply X

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics	
Estuarine	
Natural Heritage Wetland	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	X

Wetland HGM Class used for Rating	
Depressional	X
Riverine	
Lake-fringe	
Slope	
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	**YES**	**NO**
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is a Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual)*.
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

Wetland name or number WSE5

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the <u>potential</u> to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) .... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet .... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) .... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure** ___ 2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area .... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area .... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area .... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area .... points = 0 **Map of Cowardin vegetation classes**	**Figure** ___ 5
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland .... points = 4 • Area seasonally ponded is > 1/4 total area of wetland .... points = 2 • Area seasonally ponded is < 1/4 total area of wetland .... points = 0 **Map of Hydroperiods**	**Figure** ___ 0
	Total for D 1 *Add the points in the boxes above*	7
D 2	**Does the wetland have the <u>opportunity</u> to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __X__ Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other ________ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier 2
◆	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	14
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the <u>potential</u> to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) .... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet .... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .... points = 0	2
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet .... points = 7 • The wetland is a "headwater" wetland .... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet .... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet .... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft .... points = 0	0
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit .... points = 5 • The area of the basin is 10 to 100 times the area of the unit .... points = 3 • The area of the basin is more than 100 times the area of the unit .... points = 0 • Entire unit is in the FLATS class .... points = 5	3
	Total for D 3 *Add the points in the boxes above*	5

D 4	**Does the wetland have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. ____X Wetland drains to a river or stream that has flooding problems ____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other ________________ YES multiplier is 2 NO multiplier is 1	*(see p. 49)* Multiplier 2 _______
◆	**TOTAL – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	10

Comments:

	These questions apply to wetlands of all HGM classes.	**Points** (only 1 score per box)
	HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	
H 1	**Does the wetland have the potential to provide habitat for many species?**	

H 1.1 Vegetation structure *(see P. 72)*: — **Figure** ___

Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.

- ____ Aquatic Bed
- ____ Emergent plants
- ____ Scrub/shrub (areas where shrubs have > 30% cover)
- X Forested (areas where trees have > 30% cover)

If the unit has a forested class check if:

- X The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon.

Add the number of vegetation types that qualify. If you have: **Map of Cowardin vegetation classes**

4 structures or more....... points = 4 — 3 structures.................. points = 2
2 structures................... points = 1 — 1 structure .... points = 0

Points: 1

H 1.2 Hydroperiods *(see p.73)*: — **Figure** ___

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).

- ____ Permanently flooded or inundated — 4 or more types present points = 3
- X Seasonally flooded or inundated — 3 or more types present......points = 2
- ____ Occasionally flooded or inundated — 2 types present..................points = 1
- X Saturated only — 1 type present ....points = 0
- X Permanently flowing stream or river in, or adjacent to, the wetland
- ____ Seasonally flowing stream in, or adjacent to, the wetland
- ____ **Lake-fringe wetland................. = 2 points**
- ____ **Freshwater tidal wetland......... = 2 points**

Map of hydroperiods

Points: 2

H 1.3 Richness of Plant Species *(see p. 75)*:

Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*

You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.

If you counted: > 19 species .... points = 2
5 – 19 species.................... points = 1
< 5 species .... points = 0

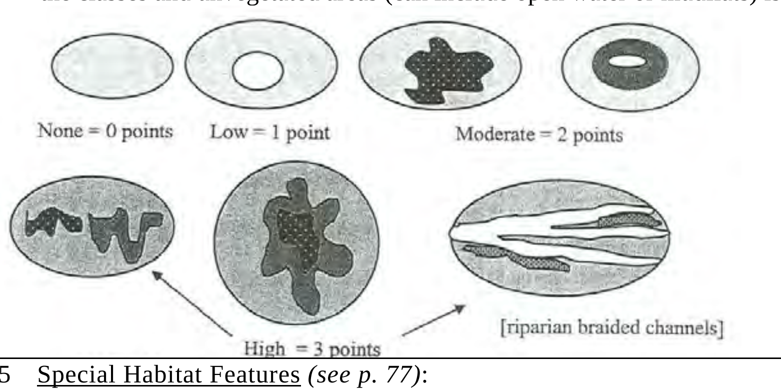
List species below if you want to:

____

Points: 1

H 1.4 Interspersion of Habitats *(see p. 76)*: — **Figure** ___

Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

Points: 0

H 1.5 Special Habitat Features *(see p. 77)*:

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

- ____ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
- X Standing snags (diameter at the bottom > 4 inches) in the wetland
- ____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
- ____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
- ____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
- ____ Invasive plants cover less than 25% of the wetland area in each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*

Points: 1

H 1 TOTAL Score – potential for providing habitat — *Add the points in the column above* — **5**

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ **points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference .... **points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference .... **points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference .... **points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .... **points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .... **points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK........ **points = 2** ____ Heavy grazing in buffer .... **points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)........ **points = 0** __X__ Buffer does not meet any of the criteria above .... **points = 1** **Arial photo showing buffers**	**Figure ___** 1
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	0

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). __X__ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	1
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile....................points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	5
	TOTAL for H 1 from page 8	5
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	10

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D ________ or accessed from WNHP/DNR web site ________ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ________ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ____X__ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cove*r)? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X_ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

Wetland name or number WSE6

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WSE6 Date of site visit: 3/19/12

Rated by: M Maynard Trained by Ecology? Yes X No ___ Date of training: 04/06

SEC: 20 TWNSHP: 26N RNGE: 4E Is S/T/R in Appendix D? Yes ___ No X

Map of wetland unit: Figure ___ Estimated size ___

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I ___ II ___ III X IV ___

Category I =	Score > 70	Score for Water Quality Functions	12
Category II =	Score 51 - 69	Score for Hydrologic Functions	18
Category III =	Score 30 – 50	Score for Habitat Functions	7
Category IV =	Score < 30	TOTAL Score for Functions	37

Category based on SPECIAL CHARACTERISTCS of Wetland I ___ II ___ Does not apply X

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection **(in addition to the protection recommended for its category)**	**YES**	**NO**
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is a Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual).*
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the potential to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) .... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet .... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) .... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure ___** 3
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area .... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area .... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area .... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area .... points = 0 **Map of Cowardin vegetation classes**	**Figure ___** 3
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland .... points = 4 • Area seasonally ponded is > 1/4 total area of wetland .... points = 2 • Area seasonally ponded is < 1/4 total area of wetland .... points = 0 **Map of Hydroperiods**	**Figure ___** 0
	Total for D 1 *Add the points in the boxes above*	6
D 2	**Does the wetland have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __X Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other ________ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier 2
◆	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	12
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the potential to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) .... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet .... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .... points = 0	4
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet .... points = 7 • The wetland is a "headwater" wetland .... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet .... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet .... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft .... points = 0	0
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit .... points = 5 • The area of the basin is 10 to 100 times the area of the unit .... points = 3 • The area of the basin is more than 100 times the area of the unit .... points = 0 • Entire unit is in the FLATS class .... points = 5	5
	Total for D 3 *Add the points in the boxes above*	9

D 4	**Does the wetland have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. ____ Wetland drains to a river or stream that has flooding problems X Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other ____ YES multiplier is 2 NO multiplier is 1	*(see p. 49)* Multiplier 2
◆	**TOTAL – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	18

Comments:

These questions apply to wetlands of all HGM classes.	**Points** (only 1 score per box)
HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	

H 1 Does the wetland have the potential to provide habitat for many species?

H 1.1 Vegetation structure *(see P. 72)*: — Figure ___

Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.

____ Aquatic Bed
____ Emergent plants
____X Scrub/shrub (areas where shrubs have > 30% cover)
____ Forested (areas where trees have > 30% cover)

If the unit has a forested class check if:

____ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon.

Add the number of vegetation types that qualify. If you have: **Map of Cowardin vegetation classes**

4 structures or more .... points = 4
3 structures .... points = 2
2 structures .... points = 1
1 structure .... points = 0

Points: 0

H 1.2 Hydroperiods *(see p.73)*: — Figure ___

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).

____ Permanently flooded or inundated — 4 or more types present points = 3
____ Seasonally flooded or inundated — 3 or more types present...... points = 2
X___ Occasionally flooded or inundated — 2 types present.................. points = 1
____X Saturated only — 1 type present .... points = 0
____ Permanently flowing stream or river in, or adjacent to, the wetland
____ Seasonally flowing stream in, or adjacent to, the wetland
____ **Lake-fringe wetland .... = 2 points**
____ **Freshwater tidal wetland .... = 2 points** — **Map of hydroperiods**

Points: 1

H 1.3 Richness of Plant Species *(see p. 75)*:

Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*

You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted:

> 19 species .... points = 2
5 – 19 species.................... points = 1
< 5 species .... points = 0

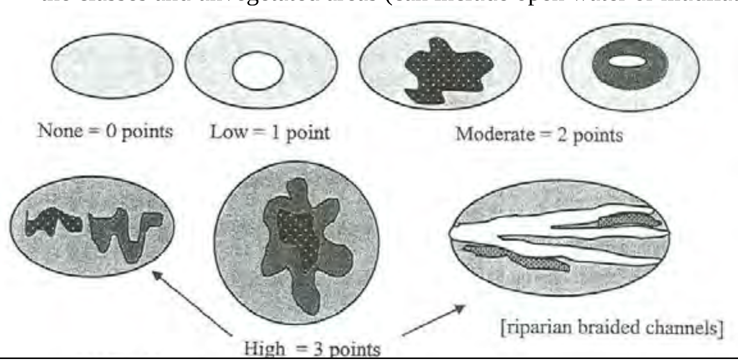
List species below if you want to:

____
____
____
____

Points: 1

H 1.4 Interspersion of Habitats *(see p. 76)*: — Figure ___

Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

Points: 0

H 1.5 Special Habitat Features *(see p. 77)*:

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
____ Standing snags (diameter at the bottom > 4 inches) in the wetland
____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
____ Invasive plants cover less than 25% of the wetland area in each stratum of plants
NOTE: The 20% stated in early printings of the manual on page 78 is an error.

Points: 0

H 1 TOTAL Score – potential for providing habitat — *Add the points in the column above* — **2**

H 2	**Does the wetland have the opportunity to provide habitat for many species?**	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ **points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference .... **points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference .... **points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference .... **points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .... **points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .... **points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK.. **points = 2** ____ Heavy grazing in buffer .... **points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)............................ **points = 0** __X__ Buffer does not meet any of the criteria above .... **points = 1** **Arial photo showing buffers**	**Figure ___** 1
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	0

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). __X__ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	1
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile....................points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	5
	TOTAL for H 1 from page 8	2
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	7

Comments:

Wetland name or number __________WSE6_________

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D _______ or accessed from WNHP/DNR web site _______ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO _______ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ___X__ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cove*r)? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X__ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WSE7 Date of site visit: 3/19/12

Rated by: M Maynard Trained by Ecology? Yes X No ___ Date of training: 04/06

SEC: 20 TWNSHP: 26N RNGE: 4E Is S/T/R in Appendix D? Yes ___ No X

Map of wetland unit: Figure ___ Estimated size ___

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I ___ II ___ III X IV ___

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	18
Score for Hydrologic Functions	10
Score for Habitat Functions	9
TOTAL Score for Functions	37

Category based on SPECIAL CHARACTERISTCS of Wetland I ___ II ___ Does not apply X

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	**YES**	**NO**
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is a Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual).*
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

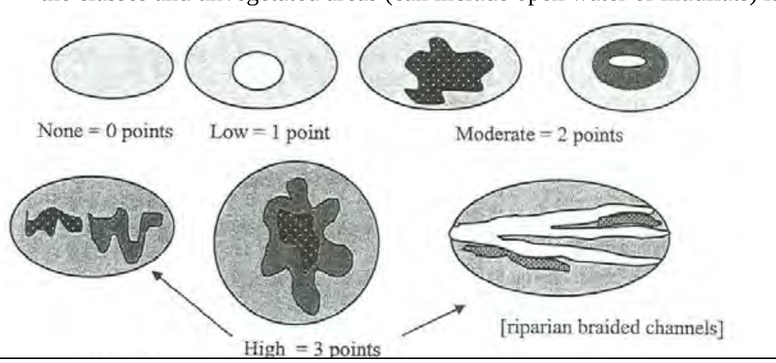
If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the <u>potential</u> to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) .... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet .... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) .... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure** ___ 2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area .... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area .... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area .... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area .... points = 0 **Map of Cowardin vegetation classes**	**Figure** ___ 5
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland .... points = 4 • Area seasonally ponded is > 1/4 total area of wetland .... points = 2 • Area seasonally ponded is < 1/4 total area of wetland .... points = 0 **Map of Hydroperiods**	**Figure** ___ 2
	Total for D 1 *Add the points in the boxes above*	9
D 2	**Does the wetland have the <u>opportunity</u> to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __X__ Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other ____ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier 2
◆	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	18
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the <u>potential</u> to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) .... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet .... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .... points = 0	2
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet .... points = 7 • The wetland is a "headwater" wetland .... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet .... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet .... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft .... points = 0	0
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit .... points = 5 • The area of the basin is 10 to 100 times the area of the unit .... points = 3 • The area of the basin is more than 100 times the area of the unit .... points = 0 • Entire unit is in the FLATS class .... points = 5	3
	Total for D 3 *Add the points in the boxes above*	5

D 4	**Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. __2__ Wetland drains to a river or stream that has flooding problems ____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other ________________ YES multiplier is 2 NO multiplier is 1	*(see p. 49)* Multiplier 2 _______
◆	**<u>TOTAL</u> – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	10

Comments:

Wetland name or number _______WSE7____________

	These questions apply to wetlands of all HGM classes.	Points
	HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 score per box)
H 1	**Does the wetland have the potential to provide habitat for many species?**	
	H 1.1 Vegetation structure *(see P. 72)*: *Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____ Aquatic Bed __X_ Emergent plants __X_ Scrub/shrub (areas where shrubs have > 30% cover) ____ Forested (areas where trees have > 30% cover) *If the unit has a forested class check if:* ____ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. *Add the number of vegetation types that qualify. If you have:* **Map of Cowardin vegetation classes** 4 structures or more....... points = 4 3 structures.................. points = 2 2 structures................... points = 1 1 structure .... points = 0	**Figure ___** 1
	H 1.2 Hydroperiods *(see p.73)*: *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).* ____ Permanently flooded or inundated 4 or more types present points = 3 X___ Seasonally flooded or inundated 3 or more types present......points = 2 ____ Occasionally flooded or inundated 2 types present..................points = 1 _X__ Saturated only 1 type present ....points = 0 ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ **Lake-fringe wetland................. = 2 points** ____ **Freshwater tidal wetland......... = 2 points** **Map of hydroperiods**	**Figure ___** 1
	H 1.3 Richness of Plant Species *(see p. 75)*: Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.* If you counted: > 19 species .... points = 2 5 – 19 species.................... points = 1 List species below if you want to: < 5 species .... points = 0 ____ ____ ____ ____	1
	H 1.4 Interspersion of Habitats *(see p. 76)*: Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". **Use map of Cowardin classes.**	**Figure ___** 1
	H 1.5 Special Habitat Features *(see p. 77)*: *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ____ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) ____ Standing snags (diameter at the bottom > 4 inches) in the wetland ____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) ____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ____ Invasive plants cover less than 25% of the wetland area in each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	0
	H 1 TOTAL Score – potential for providing habitat *Add the points in the column above*	4

<table>
<tr><td>H 2</td><td>Does the wetland have the <u>opportunity</u> to provide habitat for many species?</td><td>(only 1 score per box)</td></tr>
<tr><td></td><td>H 2.1 <u>Buffers</u> (see P. 80):
Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ points = 5
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference........ points = 4
____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference........ points = 4
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference........ points = 3
____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .... points = 3
If buffer does not meet any of the criteria above:
____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .... points = 2
____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK........ points = 2
____ Heavy grazing in buffer .... points = 1
____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)........ points = 0
__X_ Buffer does not meet any of the criteria above .... points = 1
Arial photo showing buffers</td><td>Figure ___

1</td></tr>
<tr><td></td><td>H 2.2 <u>Corridors and Connections</u> (see p. 81)
H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).
YES = 4 points (go to H 2.3) NO = go to H 2.2.2
H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above?
YES = 2 points (go to H 2.3) NO = go to H 2.2.3
H. 2.2.3 Is the wetland:
• Within 5 mi (8km) of a brackish or salt water estuary OR
• Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point
• Within 1 mile of a lake greater than 20 acres? NO = 0 points</td><td>0</td></tr>
</table>

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). _X__ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	1
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile..........points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	5
	TOTAL for H 1 from page 8	4
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	9

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D ________ or accessed from WNHP/DNR web site ________ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ________ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ___X___ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cove*r)? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**<u>Forested Wetlands</u>** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X_ not a forested wetland with special characteristics	**Cat. I**
SC5	**<u>Wetlands in Coastal Lagoons</u>** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**<u>Interdunal Wetlands</u>** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WSE8 Date of site visit: 3/21/12

Rated by: M Maynard Trained by Ecology? Yes X No ___ Date of training: 04/06

SEC: 20 TWNSHP: 26N RNGE: 4E Is S/T/R in Appendix D? Yes ___ No X

Map of wetland unit: Figure ___ Estimated size ___

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I ___ II ___ III X IV ___

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	18
Score for Hydrologic Functions	10
Score for Habitat Functions	13
TOTAL Score for Functions	41

Category based on SPECIAL CHARACTERISTCS of Wetland I ___ II ___ Does not apply X

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics	
Estuarine	
Natural Heritage Wetland	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	X

Wetland HGM Class used for Rating	
Depressional	X
Riverine	
Lake-fringe	
Slope	
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection **(in addition to the protection recommended for its category)**	**YES**	**NO**
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

<u>To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.</u>

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is a Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual).*
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the potential to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) .... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet .... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) .... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure** ___ 2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area .... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area .... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area .... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area .... points = 0 **Map of Cowardin vegetation classes**	**Figure** ___ 5
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland .... points = 4 • Area seasonally ponded is > 1/4 total area of wetland .... points = 2 • Area seasonally ponded is < 1/4 total area of wetland .... points = 0 **Map of Hydroperiods**	**Figure** ___ 2
	Total for D 1 *Add the points in the boxes above*	9
D 2	**Does the wetland have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __X_ Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other ____ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier 2
◆	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	18
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the potential to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) .... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet .... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .... points = 0	2
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet .... points = 7 • The wetland is a "headwater" wetland .... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet .... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet .... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft .... points = 0	0
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit .... points = 5 • The area of the basin is 10 to 100 times the area of the unit .... points = 3 • The area of the basin is more than 100 times the area of the unit .... points = 0 • Entire unit is in the FLATS class .... points = 5	3
	Total for D 3 *Add the points in the boxes above*	5

D 4	**Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. X___ Wetland drains to a river or stream that has flooding problems ____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other ________________ YES multiplier is 2 NO multiplier is 1	*(see p. 49)* Multiplier 2
◆	**<u>TOTAL</u> – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	10

Comments:

These questions apply to wetlands of all HGM classes.	**Points** (only 1 score per box)
HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	

H 1 Does the wetland have the potential to provide habitat for many species?

H 1.1 Vegetation structure *(see P. 72)*: — **Figure ___**

Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.

____ Aquatic Bed
____ Emergent plants
__X Scrub/shrub (areas where shrubs have > 30% cover)
X__ Forested (areas where trees have > 30% cover)

If the unit has a forested class check if:

X__ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon.

Add the number of vegetation types that qualify. If you have: **Map of Cowardin vegetation classes**

4 structures or more .... points = 4 | 3 structures .... points = 2
2 structures .... points = 1 | 1 structure .... points = 0

Points: 2

H 1.2 Hydroperiods *(see p.73)*: — **Figure ___**

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).

____ Permanently flooded or inundated — 4 or more types present points = 3
__X Seasonally flooded or inundated — 3 or more types present...... points = 2
____ Occasionally flooded or inundated — 2 types present.................. points = 1
X__ Saturated only — 1 type present .... points = 0
____ Permanently flowing stream or river in, or adjacent to, the wetland
____ Seasonally flowing stream in, or adjacent to, the wetland
____ **Lake-fringe wetland .... = 2 points**
____ **Freshwater tidal wetland .... = 2 points**

Map of hydroperiods

Points: 2

H 1.3 Richness of Plant Species *(see p. 75)*:

Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*

You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted:

> 19 species .... points = 2
5 – 19 species.................... points = 1
< 5 species .... points = 0

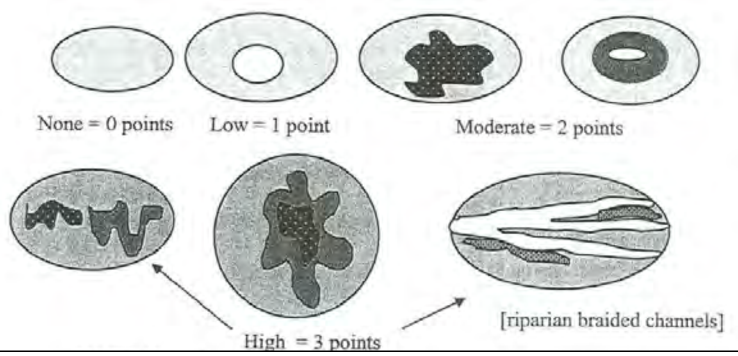
List species below if you want to:

____
____
____
____

Points: 1

H 1.4 Interspersion of Habitats *(see p. 76)*: — **Figure ___**

Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

Points: 1

H 1.5 Special Habitat Features *(see p. 77)*:

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

X__ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
X__ Standing snags (diameter at the bottom > 4 inches) in the wetland
____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
____ Invasive plants cover less than 25% of the wetland area in each stratum of plants
NOTE: The 20% stated in early printings of the manual on page 78 is an error.

Points: 2

H 1 TOTAL Score – potential for providing habitat *Add the points in the column above* — **8**

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ **points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference........ **points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference........ **points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference........ **points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .... **points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .... **points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK........ **points = 2** ____ Heavy grazing in buffer .... **points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)........ **points = 0** X Buffer does not meet any of the criteria above........ **points = 1** **Arial photo showing buffers**	**Figure ___** 1
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	0

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). __X__ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	1
	H 2.4 Wetland Landscape: *Choose the* ***one*** *description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile..........points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	5
	TOTAL for H 1 from page 8	8
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	13

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*

SC1 **Estuarine wetlands?** *(see p.86)*

Does the wetland unit meet the following criteria for Estuarine wetlands?

____ The dominant water regime is tidal,

____ Vegetated, and

____ With a salinity greater than 0.5 ppt.

YES = Go to SC 1.1 NO __X__

SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2 — **Cat. 1**

SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions?

YES = Category I NO = Category II — **Cat. I** / **Cat. II** / **Dual Rating I/II**

____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre.

____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland

____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.

SC2 **Natural Heritage Wetlands** *(see p. 87)*

Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.

SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)*

S/T/R information from Appendix D ________ or accessed from WNHP/DNR web site ________

YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ________

SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species?

YES = Category 1 NO ____X__ not a Heritage Wetland — **Cat I**

SC3 **Bogs** *(see p. 87)*

Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.***

1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2
2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating
3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)?

   YES = Is a bog for purpose of rating NO = go to question 4

   NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.
4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cove*r)?

   YES = Category I NO = Is not a bog for purpose of rating — **Cat. I**

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X__ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WSH1 Date of site visit: 3/15/12

Rated by: M Maynard Trained by Ecology? Yes X No ___ Date of training: 04/06

SEC: 17 TWNSHP: 26N RNGE: 4E Is S/T/R in Appendix D? Yes ___ No X

Map of wetland unit: Figure ___ Estimated size ___

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I___ II___ III X IV___

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	10
Score for Hydrologic Functions	12
Score for Habitat Functions	12
TOTAL Score for Functions	34

Category based on SPECIAL CHARACTERISTCS of Wetland I___ II___ Does not apply X

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics	
Estuarine	
Natural Heritage Wetland	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	X

Wetland HGM Class used for Rating	
Depressional	X
Riverine	
Lake-fringe	
Slope	
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	X

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	**YES**	**NO**
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   _____X The wetland is on a slope *(slope can be very gradual)*.
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the <u>potential</u> to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) .... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet .... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) .... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure ___** 2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area .... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area .... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area .... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area .... points = 0 **Map of Cowardin vegetation classes**	**Figure ___** 1
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland .... points = 4 • Area seasonally ponded is > 1/4 total area of wetland .... points = 2 • Area seasonally ponded is < 1/4 total area of wetland .... points = 0 **Map of Hydroperiods**	**Figure ___** 2
	Total for D 1 *Add the points in the boxes above*	5
D 2	**Does the wetland have the <u>opportunity</u> to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __X__ Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other ____ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier 2
◆	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	10
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the <u>potential</u> to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) .... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet .... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .... points = 0	2
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet .... points = 7 • The wetland is a "headwater" wetland .... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet .... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet .... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft .... points = 0	3
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit .... points = 5 • The area of the basin is 10 to 100 times the area of the unit .... points = 3 • The area of the basin is more than 100 times the area of the unit .... points = 0 • Entire unit is in the FLATS class .... points = 5	3
	Total for D 3 *Add the points in the boxes above*	6

D 4	**Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. X___ Wetland drains to a river or stream that has flooding problems ____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other ____________________ YES multiplier is 2 NO multiplier is 1	*(see p. 49)* Multiplier 2
◆	**<u>TOTAL</u> – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	12

Comments:

Wetland name or number ________WSH1 __________

These questions apply to wetlands of all HGM classes.	Points
HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 score per box)

H 1 Does the wetland have the potential to provide habitat for many species?

H 1.1 Vegetation structure *(see P. 72)*:
Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.

____ Aquatic Bed
__X__ Emergent plants
__X__ Scrub/shrub (areas where shrubs have > 30% cover)
__X__ Forested (areas where trees have > 30% cover)

If the unit has a forested class check if:
____ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon.

Add the number of vegetation types that qualify. If you have: **Map of Cowardin vegetation classes**
4 structures or more....... points = 4 — 3 structures.................. points = 2
2 structures................... points = 1 — 1 structure .... points = 0

Figure ___ — Points: 2

H 1.2 Hydroperiods *(see p.73)*:
Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).

__X__ Permanently flooded or inundated — 4 or more types present points = 3
X___ Seasonally flooded or inundated — 3 or more types present......points = 2
____ Occasionally flooded or inundated — 2 types present..................points = 1
__X__ Saturated only — 1 type present ....points = 0
____ Permanently flowing stream or river in, or adjacent to, the wetland
____ Seasonally flowing stream in, or adjacent to, the wetland
____ **Lake-fringe wetland................. = 2 points**
____ **Freshwater tidal wetland......... = 2 points** — **Map of hydroperiods**

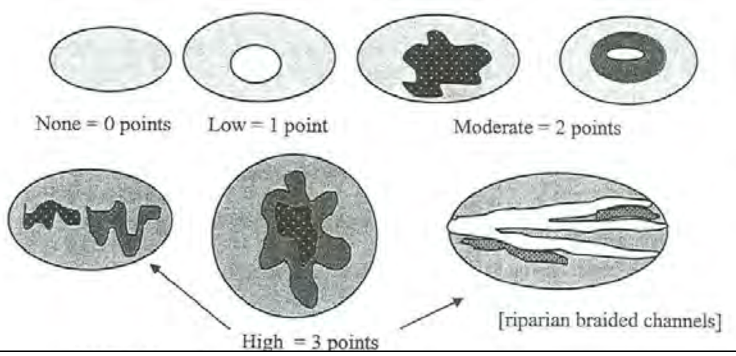
Figure ___ — Points: 2

H 1.3 Richness of Plant Species *(see p. 75)*:
Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*
You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.
If you counted: > 19 species .... points = 2
5 – 19 species.................... points = 1
List species below if you want to: < 5 species .... points = 0

____
____
____
____

Points: 1

H 1.4 Interspersion of Habitats *(see p. 76)*:
Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

Figure ___ — Points: 2

H 1.5 Special Habitat Features *(see p. 77)*:
Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
____ Standing snags (diameter at the bottom > 4 inches) in the wetland
____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
X___ Invasive plants cover less than 25% of the wetland area in each stratum of plants
NOTE: The 20% stated in early printings of the manual on page 78 is an error.

Points: 1

H 1 TOTAL Score – potential for providing habitat — *Add the points in the column above* — 8

<table>
<tr><td>H 2</td><td>Does the wetland have the <u>opportunity</u> to provide habitat for many species?</td><td>(only 1 score per box)</td></tr>
<tr><td></td><td>H 2.1 <u>Buffers</u> (see P. 80):
Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ points = 5
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference .... points = 4
____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference .... points = 4
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference .... points = 3
____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .... points = 3
If buffer does not meet any of the criteria above:
____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .... points = 2
____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK .... points = 2
____ Heavy grazing in buffer .... points = 1
____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) .... points = 0
__X_ Buffer does not meet any of the criteria above .... points = 1
Arial photo showing buffers</td><td>Figure ___
1</td></tr>
<tr><td></td><td>H 2.2 <u>Corridors and Connections</u> (see p. 81)
H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).
YES = 4 points (go to H 2.3) NO = go to H 2.2.2
H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above?
YES = 2 points (go to H 2.3) NO = go to H 2.2.3
H. 2.2.3 Is the wetland:
• Within 5 mi (8km) of a brackish or salt water estuary OR
• Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point
• Within 1 mile of a lake greater than 20 acres? NO = 0 points</td><td>0</td></tr>
</table>

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report* *http://wdfw.wa.gov/hab/phslist.htm*) Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). ____ **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*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	0
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile..........points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	4
	TOTAL for H 1 from page 8	8
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	12

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D ________ or accessed from WNHP/DNR web site ________ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ________ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ____X___ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cove*r)? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X__ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WSH2 Date of site visit: 3/15/12

Rated by: M Maynard Trained by Ecology? Yes X No ___ Date of training: 04/06

SEC: 17 TWNSHP: 26N RNGE: 4E Is S/T/R in Appendix D? Yes ___ No X

Map of wetland unit: Figure ___ Estimated size ___

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I ___ II ___ III ___ IV X

Category I =	Score > 70	Score for Water Quality Functions	12
Category II =	Score 51 - 69	Score for Hydrologic Functions	10
Category III =	Score 30 – 50	Score for Habitat Functions	5
Category IV =	Score < 30	TOTAL Score for Functions	27

Category based on SPECIAL CHARACTERISTCS of Wetland I ___ II ___ Does not apply X

Final Category (choose the "highest" category from above") IV

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	X

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection **(in addition to the protection recommended for its category)**	**YES**	**NO**
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual)*.
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

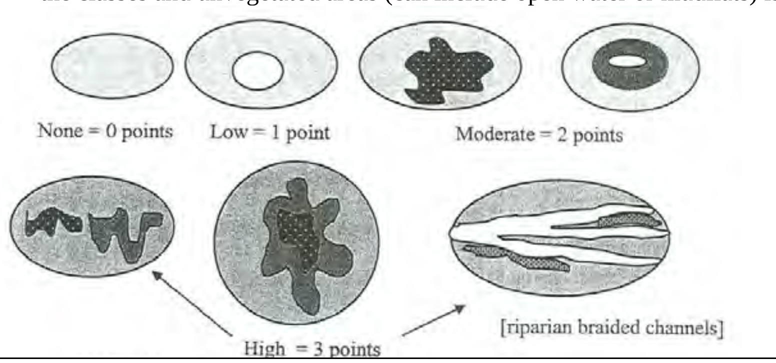
HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the potential to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) .... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet .... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) .... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure ___** 2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area .... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area .... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area .... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area .... points = 0 **Map of Cowardin vegetation classes**	**Figure ___** 0
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland .... points = 4 • Area seasonally ponded is > 1/4 total area of wetland .... points = 2 • Area seasonally ponded is < 1/4 total area of wetland .... points = 0 **Map of Hydroperiods**	**Figure ___** 4
	Total for D 1 *Add the points in the boxes above*	6
D 2	**Does the wetland have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __X__ Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other ____________ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier 2
◆	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	12
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the potential to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) .... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet .... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .... points = 0	2
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet .... points = 7 • The wetland is a "headwater" wetland .... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet .... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet .... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft .... points = 0	3
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit .... points = 5 • The area of the basin is 10 to 100 times the area of the unit .... points = 3 • The area of the basin is more than 100 times the area of the unit .... points = 0 • Entire unit is in the FLATS class .... points = 5	5
	Total for D 3 *Add the points in the boxes above*	10

D 4	**Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. ____ Wetland drains to a river or stream that has flooding problems ____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other ______ YES multiplier is 2 NO multiplier is 1	*(see p. 49)* Multiplier 1
◆	**<u>TOTAL</u> – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	10

Comments:

	These questions apply to wetlands of all HGM classes.	**Points**
	HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 score per box)
H 1	**Does the wetland have the potential to provide habitat for many species?**	
	H 1.1 Vegetation structure *(see P. 72)*: *Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____ Aquatic Bed __X_ Emergent plants ____ Scrub/shrub (areas where shrubs have > 30% cover) ____ Forested (areas where trees have > 30% cover) *If the unit has a forested class check if:* ____ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. *Add the number of vegetation types that qualify. If you have:* **Map of Cowardin vegetation classes** 4 structures or more .... points = 4 3 structures .... points = 2 2 structures .... points = 1 1 structure .... points = 0	**Figure ___** 0
	H 1.2 Hydroperiods *(see p.73)*: *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).* ____ Permanently flooded or inundated 4 or more types present points = 3 __X_ Seasonally flooded or inundated 3 or more types present...... points = 2 ____ Occasionally flooded or inundated 2 types present.................. points = 1 ____ Saturated only 1 type present .... points = 0 ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ **Lake-fringe wetland................. = 2 points** ____ **Freshwater tidal wetland......... = 2 points** **Map of hydroperiods**	**Figure ___** 0
	H 1.3 Richness of Plant Species *(see p. 75)*: Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.* If you counted: > 19 species .... points = 2 5 – 19 species.................... points = 1 List species below if you want to: < 5 species .... points = 0 ______________________________ ______________________________ ______________________________ ______________________________	1
	H 1.4 Interspersion of Habitats *(see p. 76)*: Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". **Use map of Cowardin classes.**	**Figure ___** 0
	H 1.5 Special Habitat Features *(see p. 77)*: *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ____ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) ____ Standing snags (diameter at the bottom > 4 inches) in the wetland ____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) ____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ____ Invasive plants cover less than 25% of the wetland area in each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	0
	H 1 TOTAL Score – potential for providing habitat *Add the points in the column above*	1

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ **points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference .... **points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference .... **points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference .... **points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .... **points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .... **points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK........ **points = 2** ____ Heavy grazing in buffer .... **points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)........ **points = 0** __X_ Buffer does not meet any of the criteria above .... **points = 1** **Arial photo showing buffers**	**Figure ___** 1
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	0

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). ____ **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*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	0
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile....................points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	4
	TOTAL for H 1 from page 8	1
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	5

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D ________ or accessed from WNHP/DNR web site ________ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ________ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ____X___ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cove*r)? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**Foresked Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X_ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

Wetland name or number ________WSH3__________

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known):_____WSH3_______________________ Date of site visit:_____3/15/12__

Rated by:_____M Maynard________________ Trained by Ecology? Yes__X__ No______ Date of training:___04/06______

SEC:_____17_____ TWNSHP:___26N___ RNGE:__4E____ Is S/T/R in Appendix D? Yes________ No__X_

Map of wetland unit: Figure______________ Estimated size_____________

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I___________ II___________ III___________ IV_____X____

Category I =	Score > 70	Score for Water Quality Functions	16
Category II =	Score 51 - 69	Score for Hydrologic Functions	8
Category III =	Score 30 – 50	Score for Habitat Functions	5
Category IV =	Score < 30	TOTAL Score for Functions	29

Category based on SPECIAL CHARACTERISTCS of Wetland I_________ II_________ Does not apply_____X_____

Final Category (choose the "highest" category from above") IV

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	X
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection **(in addition to the protection recommended for its category)**	**YES**	**NO**
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

<u>To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.</u>

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is a Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual).*
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

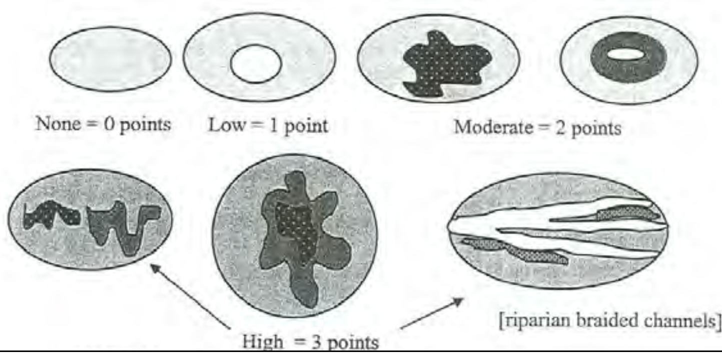
HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

Wetland name or number WSH3

S	Slope Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
S 1	**Does the wetland have the potential to improve water quality?**	*(see p.64)*
	S 1.1 Characteristics of average slope of unit: • Slope is 1% or less *(a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance)*......... points = 3 • Slope is 1% - 2% .... points = 2 • Slope is 2% - 5%. .... points = 1 • Slope is greater than 5% .... points = 0	2
	S 1.2 The soil 2 inches below the surface (or duff layer) is clay, organic *(Use NRCS definitions).* YES = 3 points NO = 0 points	
	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* • Dense, uncut, herbaceous vegetation > 90% of the wetland area........ points = 6 • Dense, uncut, herbaceous vegetation > 1/2 of area .... points = 3 • Dense, woody, vegetation > 1/2 of area........ points = 2 • Dense, uncut, herbaceous vegetation > 1/4 of area .... points = 1 • Does not meet any of the criteria above for vegetation .... points = 0 **Aerial photo or map with vegetation polygons**	**Figure ___** 6
	Total for S 1 *Add the points in the boxes above*	8
S 2	**Does the wetland have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields, logging, or orchards within 150 ft. of wetland __X Residential, urban areas, or golf courses are within 150 ft. upslope of wetland ____ Other ________ YES multiplier is 2 NO multiplier is 1	*(see p. 67)* Multiplier 2
◆	**TOTAL – Water Quality Functions** Multiply the score from S1 by S2; then ***add score to table on p. 1***	16
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.	
S 3	**Does the wetland have the potential to reduce flooding and stream erosion?**	*(see p.68)*
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms: *Choose the points appropriate for the description that best fits conditions in the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough to remain erect during surface flows).* • Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland .... points = 6 • Dense, uncut, **rigid** vegetation> 1/2 area of wetland........ points = 3 • Dense, uncut, **rigid** vegetation > 1/4 area........ points = 1 • More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid .... points = 0	6
	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows. The slope has small surface depressions that can retain water over at least 10% of its area. YES = 2 points NO = 0 points	2
	Add the points in the boxes above	8
S 4	**Does the wetland have the opportunity to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ____ Wetland has surface runoff that drains to a river or stream that has flooding problems ____ Other ________ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* YES multiplier is 2 NO multiplier is 1	*(see p. 70)* Multiplier 1
◆	**TOTAL – Hydrologic Functions** Multiply the score from S3 by S4; then ***add score to table on p. 1***	8

Comments:

	These questions apply to wetlands of all HGM classes.	**Points** (only 1 score per box)
	HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	
H 1	**Does the wetland have the <u>potential</u> to provide habitat for many species?**	
	H 1.1 <u>Vegetation structure</u> *(see P. 72)*: *Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____ Aquatic Bed __X_ Emergent plants ____ Scrub/shrub (areas where shrubs have > 30% cover) ____ Forested (areas where trees have > 30% cover) *If the unit has a forested class check if:* ____ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. *Add the number of vegetation types that qualify. If you have:* **Map of Cowardin vegetation classes** 4 structures or more .... points = 4 3 structures .... points = 2 2 structures .... points = 1 1 structure .... points = 0	**Figure ___** 0
	H 1.2 <u>Hydroperiods</u> *(see p.73)*: *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).* ____ Permanently flooded or inundated 4 or more types present points = 3 ____ Seasonally flooded or inundated 3 or more types present...... points = 2 __X_ Occasionally flooded or inundated 2 types present.................. points = 1 __X_ Saturated only 1 type present .... points = 0 ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ **Lake-fringe wetland................. = 2 points** ____ **Freshwater tidal wetland......... = 2 points** **Map of hydroperiods**	**Figure ___** 1
	H 1.3 <u>Richness of Plant Species</u> *(see p. 75)*: Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.* If you counted: > 19 species .... points = 2 5 – 19 species.................... points = 1 List species below if you want to: < 5 species .... points = 0 ____________________ ____________________ ____________________ ____________________	0
	H 1.4 Interspersion of Habitats *(see p. 76)*: Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". **Use map of Cowardin classes.**	**Figure ___** 0
	H 1.5 <u>Special Habitat Features</u> *(see p. 77)*: *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ____ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) ____ Standing snags (diameter at the bottom > 4 inches) in the wetland ____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) ____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ____ Invasive plants cover less than 25% of the wetland area in each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	0
	H 1 TOTAL Score – potential for providing habitat *Add the points in the column above*	1

<table>
<tr><td>H 2</td><td>Does the wetland have the <u>opportunity</u> to provide habitat for many species?</td><td>(only 1 score per box)</td></tr>
<tr><td></td><td>H 2.1 <u>Buffers</u> (see P. 80):
Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of “undisturbed”.
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ points = 5
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference .... points = 4
____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference .... points = 4
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference .... points = 3
____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .... points = 3
If buffer does not meet any of the criteria above:
____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .... points = 2
____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK........ points = 2
____ Heavy grazing in buffer .... points = 1
____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)........ points = 0
<u>X</u>___ Buffer does not meet any of the criteria above .... points = 1
Arial photo showing buffers</td><td>Figure ___
1</td></tr>
<tr><td></td><td>H 2.2 <u>Corridors and Connections</u> (see p. 81)
H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).
YES = 4 points (go to H 2.3) NO = go to H 2.2.2
H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above?
YES = 2 points (go to H 2.3) NO = go to H 2.2.3
H. 2.2.3 Is the wetland:
• Within 5 mi (8km) of a brackish or salt water estuary OR
• Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point
• Within 1 mile of a lake greater than 20 acres? NO = 0 points</td><td>0</td></tr>
</table>

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). ____ **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*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	0
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile........points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	1
	TOTAL for H 1 from page 8	4
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	5

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D _______ or accessed from WNHP/DNR web site _______ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO _______ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ___X__ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)*? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X__ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WSH4 Date of site visit: 3/25/12

Rated by: M Maynard Trained by Ecology? Yes X No ___ Date of training: 04/06

SEC: 5 TWNSHP: 26N RNGE: 4E Is S/T/R in Appendix D? Yes ___ No X

Map of wetland unit: Figure ___ Estimated size ___

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I ___ II ___ III X IV ___

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	14
Score for Hydrologic Functions	10
Score for Habitat Functions	10
TOTAL Score for Functions	34

Category based on SPECIAL CHARACTERISTCS of Wetland I ___ II ___ Does not apply X

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	X

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	**YES**	**NO**
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number ________WSH4 __________

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual).*
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the <u>potential</u> to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) .... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet .... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) .... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure ___** 2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area .... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area .... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area .... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area .... points = 0 **Map of Cowardin vegetation classes**	**Figure ___** 3
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland .... points = 4 • Area seasonally ponded is > 1/4 total area of wetland .... points = 2 • Area seasonally ponded is < 1/4 total area of wetland .... points = 0 **Map of Hydroperiods**	**Figure ___** 2
	Total for D 1 *Add the points in the boxes above*	7
D 2	**Does the wetland have the <u>opportunity</u> to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __X__ Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other ________ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier 2
◆	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	14
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the <u>potential</u> to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) .... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet .... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .... points = 0	2
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet .... points = 7 • The wetland is a "headwater" wetland .... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet .... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet .... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft .... points = 0	0
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit .... points = 5 • The area of the basin is 10 to 100 times the area of the unit .... points = 3 • The area of the basin is more than 100 times the area of the unit .... points = 0 • Entire unit is in the FLATS class .... points = 5	3
	Total for D 3 *Add the points in the boxes above*	5

D 4	**Does the wetland have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. __X_ Wetland drains to a river or stream that has flooding problems ____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other ______ YES multiplier is 2 NO multiplier is 1	*(see p. 49)* Multiplier 2
◆	**TOTAL – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	10

Comments:

Wetland name or number ________WSH4 __________

These questions apply to wetlands of all HGM classes.		Points
	HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 score per box)
H 1	**Does the wetland have the potential to provide habitat for many species?**	

H 1.1 Vegetation structure *(see P. 72)*:
Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.
____ Aquatic Bed
__X__ Emergent plants
____ Scrub/shrub (areas where shrubs have > 30% cover)
X___ Forested (areas where trees have > 30% cover)
If the unit has a forested class check if:
____ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon.
Add the number of vegetation types that qualify. If you have: **Map of Cowardin vegetation classes**
4 structures or more....... points = 4 3 structures.................. points = 2
2 structures................... points = 1 1 structure .... points = 0

Figure ___
Points: 1

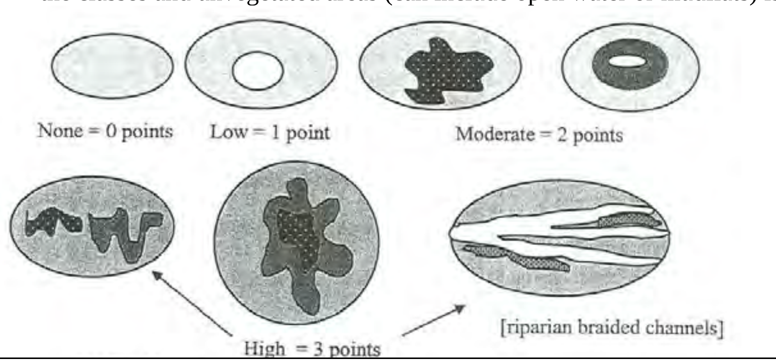
H 1.2 Hydroperiods *(see p.73)*:
Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).
____ Permanently flooded or inundated — 4 or more types present points = 3
__X__ Seasonally flooded or inundated — 3 or more types present......points = 2
____ Occasionally flooded or inundated — 2 types present..................points = 1
X___ Saturated only — 1 type present ....points = 0
____ Permanently flowing stream or river in, or adjacent to, the wetland
____ Seasonally flowing stream in, or adjacent to, the wetland
____ **Lake-fringe wetland................. = 2 points**
____ **Freshwater tidal wetland......... = 2 points** **Map of hydroperiods**

Figure ___
Points: 1

H 1.3 Richness of Plant Species *(see p. 75)*:
Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*
You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted: > 19 species .... points = 2
5 – 19 species................... points = 1
List species below if you want to: < 5 species .... points = 0
____
____
____
____

Points: 1

H 1.4 Interspersion of Habitats *(see p. 76)*:
Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

Figure ___
Points: 1

H 1.5 Special Habitat Features *(see p. 77)*:
Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.
X___ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
____ Standing snags (diameter at the bottom > 4 inches) in the wetland
____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
____ Invasive plants cover less than 25% of the wetland area in each stratum of plants
NOTE: The 20% stated in early printings of the manual on page 78 is an error.

Points: 1

H 1 TOTAL Score – potential for providing habitat *Add the points in the column above* **5**

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ **points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference............ **points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference............ **points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference............ **points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference............ **points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK............ **points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK............ **points = 2** ____ Heavy grazing in buffer............ **points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)............ **points = 0** __X_ Buffer does not meet any of the criteria above............ **points = 1** **Arial photo showing buffers**	**Figure ___** 1
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	0

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). __X__ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	1
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile..........points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	5
	TOTAL for H 1 from page 8	5
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	10

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D ________ or accessed from WNHP/DNR web site ________ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ________ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ____X___ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cove*r)? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**<u>Forested Wetlands</u>** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X__ not a forested wetland with special characteristics	**Cat. I**
SC5	**<u>Wetlands in Coastal Lagoons</u>** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**<u>Interdunal Wetlands</u>** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

Wetland name or number WSH5

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WSH5 Date of site visit: 3/21/12

Rated by: M Maynard Trained by Ecology? Yes X No__ Date of training: 04/06

SEC: 5 TWNSHP: 26N RNGE: 4E Is S/T/R in Appendix D? Yes__ No X

Map of wetland unit: Figure____ Estimated size____

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I___ II___ III X IV___

Category I =	Score > 70	Score for Water Quality Functions	12
Category II =	Score 51 - 69	Score for Hydrologic Functions	6
Category III =	Score 30 – 50	Score for Habitat Functions	12
Category IV =	Score < 30	TOTAL Score for Functions	30

Category based on SPECIAL CHARACTERISTCS of Wetland I___ II___ Does not apply X

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

<u>To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.</u>

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number _______WSH5 ___________

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is a Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual).*
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the potential to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) .... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet .... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) .... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure** ___ 1
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area .... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area .... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area .... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area .... points = 0 **Map of Cowardin vegetation classes**	**Figure** ___ 5
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland .... points = 4 • Area seasonally ponded is > 1/4 total area of wetland .... points = 2 • Area seasonally ponded is < 1/4 total area of wetland .... points = 0 **Map of Hydroperiods**	**Figure** ___ 0
	Total for D 1 *Add the points in the boxes above*	6
D 2	**Does the wetland have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __X__ Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other ____ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier 2
◆	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	12
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the potential to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) .... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet .... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .... points = 0	0
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet .... points = 7 • The wetland is a "headwater" wetland .... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet .... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet .... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft .... points = 0	0
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit .... points = 5 • The area of the basin is 10 to 100 times the area of the unit .... points = 3 • The area of the basin is more than 100 times the area of the unit .... points = 0 • Entire unit is in the FLATS class .... points = 5	3
	Total for D 3 *Add the points in the boxes above*	3

D 4	**Does the wetland have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. __X Wetland drains to a river or stream that has flooding problems ____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other ____ YES multiplier is 2 NO multiplier is 1	*(see p. 49)* Multiplier 2
◆	**TOTAL – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	6

Comments:

These questions apply to wetlands of all HGM classes. — **Points** (only 1 score per box)

HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.

H 1 Does the wetland have the potential to provide habitat for many species?

H 1.1 Vegetation structure *(see P. 72)*:

Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.

____ Aquatic Bed
____ Emergent plants
____ Scrub/shrub (areas where shrubs have > 30% cover)
X___ Forested (areas where trees have > 30% cover)

If the unit has a forested class check if:

X___ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon.

Add the number of vegetation types that qualify. If you have: **Map of Cowardin vegetation classes**

4 structures or more .... points = 4
3 structures .... points = 2
2 structures .... points = 1
1 structure .... points = 0

Figure ___

Points: 1

H 1.2 Hydroperiods *(see p.73)*:

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).

____ Permanently flooded or inundated
__X_ Seasonally flooded or inundated
__X_ Occasionally flooded or inundated
__X_ Saturated only
__X_ Permanently flowing stream or river in, or adjacent to, the wetland
____ Seasonally flowing stream in, or adjacent to, the wetland
____ **Lake-fringe wetland .... = 2 points**
____ **Freshwater tidal wetland .... = 2 points**

4 or more types present points = 3
3 or more types present...... points = 2
2 types present.................. points = 1
1 type present .... points = 0

Map of hydroperiods

Figure ___

Points: 3

H 1.3 Richness of Plant Species *(see p. 75)*:

Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*

You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted:

> 19 species .... points = 2
5 – 19 species.................... points = 1
< 5 species .... points = 0

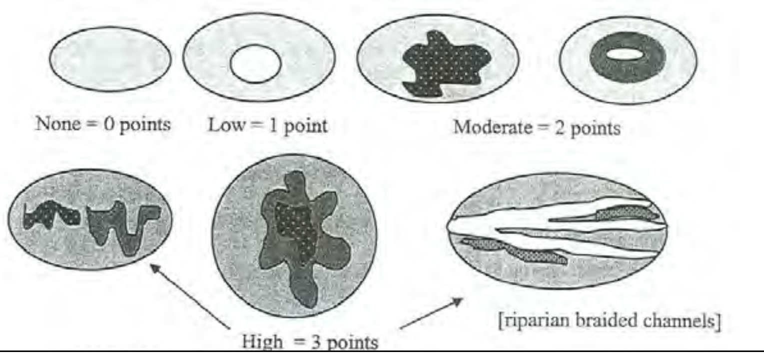
List species below if you want to:

____
____
____
____

Points: 1

H 1.4 Interspersion of Habitats *(see p. 76)*:

Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

Figure ___

Points: 0

H 1.5 Special Habitat Features *(see p. 77)*:

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

X___ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
X___ Standing snags (diameter at the bottom > 4 inches) in the wetland
____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
____ Invasive plants cover less than 25% of the wetland area in each stratum of plants
NOTE: The 20% stated in early printings of the manual on page 78 is an error.

Points: 2

H 1 TOTAL Score – potential for providing habitat *Add the points in the column above* **7**

H 2	Does the wetland have the <u>opportunity</u> to provide habitat for many species?	(only 1 score per box)
	H 2.1 <u>Buffers</u> *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ **points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference........................ **points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference........................ **points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference........................ **points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .... **points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .... **points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK................ **points = 2** ____ Heavy grazing in buffer .... **points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)................ **points = 0** <u>X</u>___ Buffer does not meet any of the criteria above .... **points = 1** **Arial photo showing buffers**	**Figure ___** 1
	H 2.2 <u>Corridors and Connections</u> *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	0

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). _X___ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	1
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile........points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	5
	TOTAL for H 1 from page 8	7
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	12

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D _______ or accessed from WNHP/DNR web site _______ YES ____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO _______ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ___X__ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)*? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**<u>Forested Wetlands</u>** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X__ not a forested wetland with special characteristics	**Cat. I**
SC5	**<u>Wetlands in Coastal Lagoons</u>** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**<u>Interdunal Wetlands</u>** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

Wetland name or number WMT1

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WMT1 Date of site visit: 3/27/12

Rated by: M Maynard Trained by Ecology? Yes X No ____ Date of training: 04/06

SEC: 32 TWNSHP: 27N RNGE: 4E Is S/T/R in Appendix D? Yes ____ No X

Map of wetland unit: Figure ______ Estimated size ______

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I ____ II ____ III X IV ____

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	12
Score for Hydrologic Functions	6
Score for Habitat Functions	12
TOTAL Score for Functions	30

Category based on SPECIAL CHARACTERISTCS of Wetland I ____ II ____ Does not apply X

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics	
Estuarine	
Natural Heritage Wetland	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	X

Wetland HGM Class used for Rating	
Depressional	X
Riverine	
Lake-fringe	
Slope	
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number ________WMT1 __________

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual).*
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the <u>potential</u> to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) .... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet .... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) .... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure ___** 1
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area .... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area .... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area .... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area .... points = 0 **Map of Cowardin vegetation classes**	**Figure ___** 5
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland .... points = 4 • Area seasonally ponded is > 1/4 total area of wetland .... points = 2 • Area seasonally ponded is < 1/4 total area of wetland .... points = 0 **Map of Hydroperiods**	**Figure ___** 0
	Total for D 1 *Add the points in the boxes above*	6
D 2	**Does the wetland have the <u>opportunity</u> to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __X_ Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other ____ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier 2
◆	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	12
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the <u>potential</u> to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) .... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet .... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .... points = 0	0
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet .... points = 7 • The wetland is a "headwater" wetland .... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet .... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet .... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft .... points = 0	0
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit .... points = 5 • The area of the basin is 10 to 100 times the area of the unit .... points = 3 • The area of the basin is more than 100 times the area of the unit .... points = 0 • Entire unit is in the FLATS class .... points = 5	3
	Total for D 3 *Add the points in the boxes above*	3

D 4	**Does the wetland have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. __X_ Wetland drains to a river or stream that has flooding problems ____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other ________________ YES multiplier is 2 NO multiplier is 1	*(see p. 49)* Multiplier 2
◆	**TOTAL – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	6

Comments:

These questions apply to wetlands of all HGM classes. | **Points** (only 1 score per box)

HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.

H 1 Does the wetland have the potential to provide habitat for many species?

H 1.1 Vegetation structure *(see P. 72)*:
Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.
____ Aquatic Bed
____ Emergent plants
____ Scrub/shrub (areas where shrubs have > 30% cover)
__X_ Forested (areas where trees have > 30% cover)
If the unit has a forested class check if:
____X The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon.
Add the number of vegetation types that qualify. If you have: **Map of Cowardin vegetation classes**
4 structures or more....... points = 4 | 3 structures.................. points = 2
2 structures.................... points = 1 | 1 structure .... points = 0

Figure ___ | Points: 1

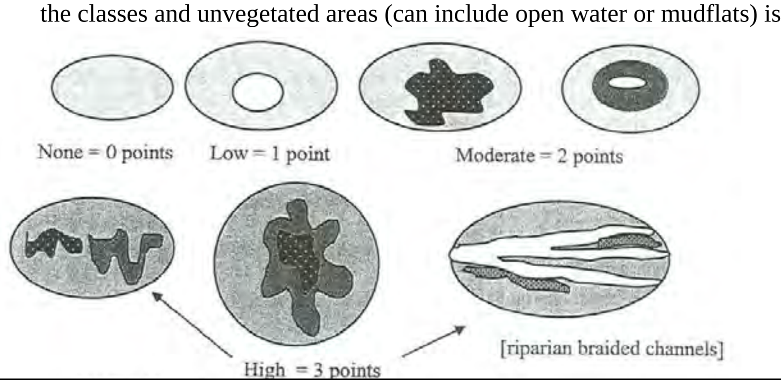
H 1.2 Hydroperiods *(see p.73)*:
Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).
____ Permanently flooded or inundated — 4 or more types present points = 3
__X_ Seasonally flooded or inundated — 3 or more types present......points = 2
X___ Occasionally flooded or inundated — 2 types present..................points = 1
__X_ Saturated only — 1 type present ....points = 0
__X_ Permanently flowing stream or river in, or adjacent to, the wetland
____ Seasonally flowing stream in, or adjacent to, the wetland
____ **Lake-fringe wetland................. = 2 points**
____ **Freshwater tidal wetland......... = 2 points** **Map of hydroperiods**

Figure ___ | Points: 3

H 1.3 Richness of Plant Species *(see p. 75)*:
Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*
You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted: > 19 species .... points = 2
5 – 19 species.................... points = 1
List species below if you want to: < 5 species .... points = 0
____
____
____
____

Points: 1

H 1.4 Interspersion of Habitats *(see p. 76)*:
Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

Figure ___ | Points: 0

H 1.5 Special Habitat Features *(see p. 77)*:
Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.
__X_ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
X___ Standing snags (diameter at the bottom > 4 inches) in the wetland
____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
____ Invasive plants cover less than 25% of the wetland area in each stratum of plants
NOTE: The 20% stated in early printings of the manual on page 78 is an error.

Points: 2

H 1 TOTAL Score – potential for providing habitat *Add the points in the column above* | **7**

<table>
<tr><td>H 2</td><td>Does the wetland have the <u>opportunity</u> to provide habitat for many species?</td><td>(only 1 score per box)</td></tr>
<tr><td></td><td>H 2.1 <u>Buffers</u> (see P. 80):
Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ points = 5
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference........................ points = 4
____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference........................ points = 4
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference........................ points = 3
____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .... points = 3
If buffer does not meet any of the criteria above:
____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .... points = 2
____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK........................ points = 2
____ Heavy grazing in buffer .... points = 1
____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)........................ points = 0
__X Buffer does not meet any of the criteria above .... points = 1
Arial photo showing buffers</td><td>Figure ___

1</td></tr>
<tr><td></td><td>H 2.2 <u>Corridors and Connections</u> (see p. 81)
H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).
YES = 4 points (go to H 2.3) NO = go to H 2.2.2
H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above?
YES = 2 points (go to H 2.3) NO = go to H 2.2.3
H. 2.2.3 Is the wetland:
• Within 5 mi (8km) of a brackish or salt water estuary OR
• Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point
• Within 1 mile of a lake greater than 20 acres? NO = 0 points</td><td>0</td></tr>
</table>

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). __X__ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	1
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile........points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	5
	TOTAL for H 1 from page 8	7
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	12

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D ________ or accessed from WNHP/DNR web site ________ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ________ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ____X__ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cove*r)? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**Foreted Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X_ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WMT2 Date of site visit: 3/27/12

Rated by: M Maynard Trained by Ecology? Yes X No ___ Date of training: 04/06

SEC: 32 TWNSHP: 27N RNGE: 4E Is S/T/R in Appendix D? Yes ___ No X

Map of wetland unit: Figure ___ Estimated size ___

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I ___ II ___ III X IV ___

Category I =	Score > 70	Score for Water Quality Functions	16
Category II =	Score 51 - 69	Score for Hydrologic Functions	16
Category III =	Score 30 – 50	Score for Habitat Functions	11
Category IV =	Score < 30	TOTAL Score for Functions	43

Category based on SPECIAL CHARACTERISTCS of Wetland I ___ II ___ Does not apply X

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	
Natural Heritage Wetland		**Riverine**	X
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above		Check if unit has multiple HGM classes present	X

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	**YES**	**NO**
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

<u>To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.</u>

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is a Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual)*.
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

R	Riverine and Freshwater Tidal Fringe Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
R 1	**Does the wetland have the potential to improve water quality?** *(see p.52)*	
	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: • Depressions cover > 3/4 area of wetland .... points = 8 • Depressions cover > 1/2 area of wetland .... points = 4 **(If depressions > 1/2 of area of unit draw polygons on aerial photo or map)** • Depressions present but cover < 1/2 area of wetland. .... points = 2 • No depressions present .... points = 0	**Figure ___** 0
	R 1.2 Characteristics of the vegetation in the unit (areas with >90% cover at person height): • Trees or shrubs > 2/3 area of the unit .... points = 8 • Trees or shrubs > 1/3 area of the wetland .... points = 6 • Ungrazed, herbaceous plants > 2/3 area of unit .... points = 6 • Ungrazed herbaceous plants > 1/3 area of unit .... points = 3 • Trees, shrubs, and ungrazed herbaceous < 1/3 area of unit .... points = 0 **Aerial photo or map showing polygons of different vegetation types**	**Figure ___** 8
	Add the points in the boxes above	8
R 2	**Does the wetland have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __X__ Residential, urban areas, golf courses are within 150 ft. of wetland ____ The river or stream linked to the wetland has a contributing basin where human activities have raised levels of sediment, toxic compounds or nutrients in the river water above standards for water quality. ____ Other ____ YES multiplier is 2 NO multiplier is 1	*(see p. 53)* Multiplier 2
◆	**TOTAL – Water Quality Functions** Multiply the score from R1 by R2; then ***add score to table on p. 1***	16
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.	
R 3	**Does the wetland have the potential to reduce flooding and erosion?**	*(see p.54)*
	R 3.1 Characteristics of the overbank storage the wetland provides: *Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of unit) / (average width of stream between banks).* • If the ratio is more than 20 .... points = 9 • If the ratio is between 10 – 20 .... points = 6 • If the ratio is 5- <10 .... points = 4 • If the ratio is 1- <5 .... points = 2 • If the ratio is < 1 .... points = 1 **Aerial photo or map showing average widths**	**Figure ___** 1
	R 3.2 Characteristics of vegetation that slow down water velocities during floods: *Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description. (polygons need to have >90% cover at person height NOT Cowardin classes):* • Forest or shrub for > 1/3 area OR herbaceous plants > 2/3 area .... points = 7 • Forest or shrub for > 1/10 area OR herbaceous plants > 1/3 area .... points = 4 • Vegetation does not meet above criteria .... points = 0 **Aerial photo or map showing polygons of different vegetation types**	**Figure ___** 7
	Add the points in the boxes above	8
R 4	**Does the wetland have the opportunity to reduce flooding and erosion?** Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. *Note which of the following conditions apply.* __X__ There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding. ____ There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding ____ Other ____ *(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike)* YES multiplier is 2 NO multiplier is 1	*(see p.57)* Multiplier 2
◆	**TOTAL – Hydrologic Functions** Multiply the score from R3 by R4; then ***add score to table on p. 1***	16

Comments:

Wetland name or number ________WMT2________

These questions apply to wetlands of all HGM classes. | **Points** (only 1 score per box)

HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.

H 1 **Does the wetland have the potential to provide habitat for many species?**

H 1.1 Vegetation structure *(see P. 72)*: **Figure ___**

Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.

____ Aquatic Bed
____ Emergent plants
____ Scrub/shrub (areas where shrubs have > 30% cover)
____X Forested (areas where trees have > 30% cover)

If the unit has a forested class check if:

X___ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon.

Add the number of vegetation types that qualify. If you have: **Map of Cowardin vegetation classes**

4 structures or more....... points = 4
3 structures................... points = 2
2 structures.................... points = 1
1 structure .... points = 0

Points: 1

H 1.2 Hydroperiods *(see p.73)*: **Figure ___**

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).

____ Permanently flooded or inundated
__X_ Seasonally flooded or inundated
____ Occasionally flooded or inundated
__X_ Saturated only
__X_ Permanently flowing stream or river in, or adjacent to, the wetland
____ Seasonally flowing stream in, or adjacent to, the wetland
____ **Lake-fringe wetland................. = 2 points**
____ **Freshwater tidal wetland......... = 2 points**

4 or more types present points = 3
3 or more types present......points = 2
2 types present..................points = 1
1 type present ....points = 0

Map of hydroperiods

Points: 2

H 1.3 Richness of Plant Species *(see p. 75)*:

Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*

You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.

If you counted:
> 19 species .... points = 2
5 – 19 species.................... points = 1
< 5 species .... points = 0

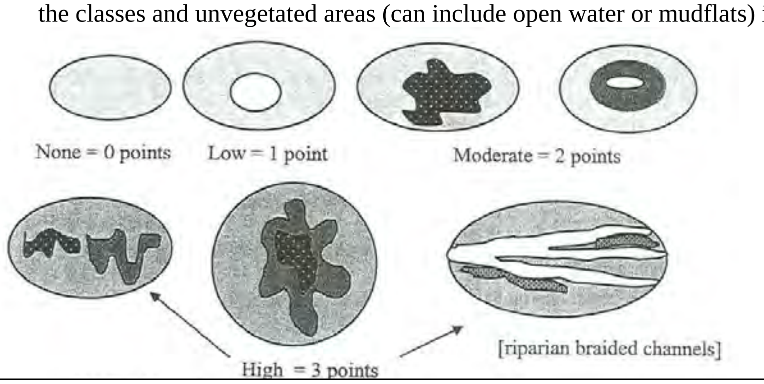
List species below if you want to:

____
____
____
____

Points: 1

H 1.4 Interspersion of Habitats *(see p. 76)*: **Figure ___**

Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

Points: 0

H 1.5 Special Habitat Features *(see p. 77)*:

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

__X_ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
X___ Standing snags (diameter at the bottom > 4 inches) in the wetland
____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
____ Invasive plants cover less than 25% of the wetland area in each stratum of plants
NOTE: The 20% stated in early printings of the manual on page 78 is an error.

Points: 2

H 1 TOTAL Score – potential for providing habitat *Add the points in the column above* | 6

<table>
<tr><th>H 2</th><th>Does the wetland have the <u>opportunity</u> to provide habitat for many species?</th><th>(only 1 score per box)</th></tr>
<tr><td></td><td>H 2.1 <u>Buffers</u> (see P. 80):
Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ points = 5
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference.......... points = 4
____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference.......... points = 4
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference.......... points = 3
____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .... points = 3
If buffer does not meet any of the criteria above:
____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .... points = 2
____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK.......... points = 2
____ Heavy grazing in buffer .... points = 1
____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland).......... points = 0
<u>X</u>___ Buffer does not meet any of the criteria above .... points = 1
Arial photo showing buffers</td><td>Figure ___

1</td></tr>
<tr><td></td><td>H 2.2 <u>Corridors and Connections</u> (see p. 81)
H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).
YES = 4 points (go to H 2.3) NO = go to H 2.2.2
H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above?
YES = 2 points (go to H 2.3) NO = go to H 2.2.3
H. 2.2.3 Is the wetland:
• Within 5 mi (8km) of a brackish or salt water estuary OR
• Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point
• Within 1 mile of a lake greater than 20 acres? NO = 0 points</td><td>0</td></tr>
</table>

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). _X___ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	1
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile....................points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	5
	TOTAL for H 1 from page 8	6
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	11

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D _______ or accessed from WNHP/DNR web site _______ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO _______ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ___X___ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cove*r)? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X__ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WMT3 Date of site visit: 3/28/12

Rated by: M Maynard Trained by Ecology? Yes X No___ Date of training: 04/06

SEC: 32 TWNSHP: 27N RNGE: 4E Is S/T/R in Appendix D? Yes___ No X

Map of wetland unit: Figure______ Estimated size______

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I____ II____ III X IV____

Category I =	Score > 70	Score for Water Quality Functions	16
Category II =	Score 51 - 69	Score for Hydrologic Functions	14
Category III =	Score 30 – 50	Score for Habitat Functions	9
Category IV =	Score < 30	TOTAL Score for Functions	39

Category based on SPECIAL CHARACTERISTCS of Wetland I____ II____ Does not apply X

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is a Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual).*
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the potential to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) .... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet .... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) .... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure** ___ 3
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area .... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area .... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area .... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area .... points = 0 **Map of Cowardin vegetation classes**	**Figure** ___ 5
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland .... points = 4 • Area seasonally ponded is > 1/4 total area of wetland .... points = 2 • Area seasonally ponded is < 1/4 total area of wetland .... points = 0 **Map of Hydroperiods**	**Figure** ___ 0
	Total for D 1 *Add the points in the boxes above*	8
D 2	**Does the wetland have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __X__ Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other ________ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier 2
◆	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	16
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the potential to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) .... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet .... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .... points = 0	4
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet .... points = 7 • The wetland is a "headwater" wetland .... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet .... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet .... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft .... points = 0	0
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit .... points = 5 • The area of the basin is 10 to 100 times the area of the unit .... points = 3 • The area of the basin is more than 100 times the area of the unit .... points = 0 • Entire unit is in the FLATS class .... points = 5	3
	Total for D 3 *Add the points in the boxes above*	7

D 4	**Does the wetland have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. ____ Wetland drains to a river or stream that has flooding problems X Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other ____ YES multiplier is 2 NO multiplier is 1	*(see p. 49)* Multiplier 2
◆	**TOTAL – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	14

Comments:

	These questions apply to wetlands of all HGM classes.	**Points** (only 1 score per box)
	HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	
H 1	**Does the wetland have the potential to provide habitat for many species?**	

H 1.1 Vegetation structure *(see P. 72)*:

Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.

____ Aquatic Bed
____ Emergent plants
____ Scrub/shrub (areas where shrubs have > 30% cover)
X___ Forested (areas where trees have > 30% cover)

If the unit has a forested class check if:

X___ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon.

Add the number of vegetation types that qualify. If you have: **Map of Cowardin vegetation classes**

4 structures or more .... points = 4 | 3 structures .... points = 2
2 structures .... points = 1 | 1 structure .... points = 0

Figure ___ — Points: 1

H 1.2 Hydroperiods *(see p.73)*:

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).

____ Permanently flooded or inundated — 4 or more types present points = 3
____ Seasonally flooded or inundated — 3 or more types present...... points = 2
____X Occasionally flooded or inundated — 2 types present.................. points = 1
____X Saturated only — 1 type present .... points = 0
____ Permanently flowing stream or river in, or adjacent to, the wetland
____ Seasonally flowing stream in, or adjacent to, the wetland
____ **Lake-fringe wetland .... = 2 points**
____ **Freshwater tidal wetland .... = 2 points** **Map of hydroperiods**

Figure ___ — Points: 1

H 1.3 Richness of Plant Species *(see p. 75)*:

Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*

You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted:

> 19 species .... points = 2
5 – 19 species.................... points = 1
< 5 species .... points = 0

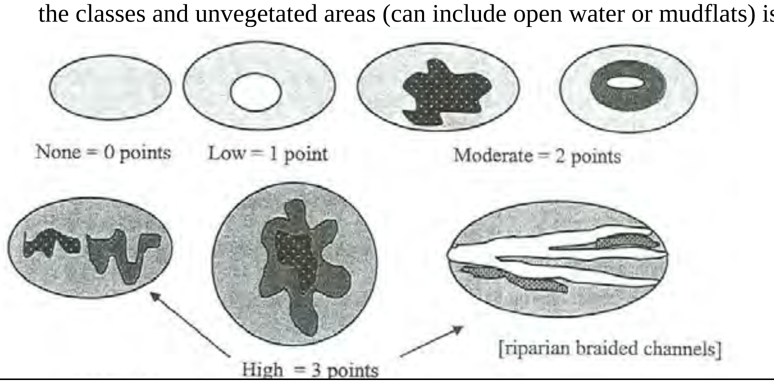
List species below if you want to:

____
____
____
____

Points: 1

H 1.4 Interspersion of Habitats *(see p. 76)*:

Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

Figure ___ — Points: 0

H 1.5 Special Habitat Features *(see p. 77)*:

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

X___ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
____ Standing snags (diameter at the bottom > 4 inches) in the wetland
____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
____ Invasive plants cover less than 25% of the wetland area in each stratum of plants
NOTE: The 20% stated in early printings of the manual on page 78 is an error.

Points: 1

	H 1 TOTAL Score – potential for providing habitat *Add the points in the column above*	4

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ **points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference........................ **points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference........................ **points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference........................ **points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .... **points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .... **points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK........................ **points = 2** ____ Heavy grazing in buffer .... **points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)........................ **points = 0** X___ Buffer does not meet any of the criteria above .... **points = 1** **Arial photo showing buffers**	**Figure ___** 1
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	0

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). _X___ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	1
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile..........points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	5
	TOTAL for H 1 from page 8	4
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	9

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D ________ or accessed from WNHP/DNR web site ________ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ________ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ___X___ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cove*r)? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

<table>
<tr><td>SC4</td><td><u>Forested Wetlands</u> (see p. 90)
Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? If you answer yes you will still need to rate the wetland based on its function.
____ Old-growth forests: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more).
NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.
____ Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.
YES = Category I NO = __X_ not a forested wetland with special characteristics</td><td>Cat. I</td></tr>
<tr><td>SC5</td><td><u>Wetlands in Coastal Lagoons</u> (see p. 91)
Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?
____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks.
____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (needs to be measured near the bottom.)
YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon
SC 5.1 Does the wetland meet all of the following three conditions?
____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74).
____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland.
____ The wetland is larger than 1/10 acre (4350 square ft.)
YES = Category I NO = Category II</td><td>Cat. I

Cat. II</td></tr>
<tr><td>SC6</td><td><u>Interdunal Wetlands</u> (see p. 93)
Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)?
YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating
If you answer yes you will still need to rate the wetland based on its functions.
In practical terms that means the following geographic areas:
• Long Beach Peninsula -- lands west of SR 103
• Grayland-Westport -- lands west of SR 105
• Ocean Shores-Copalis – lands west of SR 115 and SR 109
SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger?
YES = Category II NO = go to SC 6.2
SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre?
YES = Category III</td><td>Cat. II

Cat. III</td></tr>
<tr><td>◆</td><td>Category of wetland based on Special Characteristics
Choose the "highest" rating if wetland falls into several categories, and record on p. 1.
If you answered NO for all types enter "Not Applicable" on p. 1</td><td>NA</td></tr>
</table>

Comments:

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WMT4 Date of site visit: 3/29/12

Rated by: M Maynard Trained by Ecology? Yes X No ___ Date of training: 04/06

SEC: 32 TWNSHP: 27N RNGE: 4E Is S/T/R in Appendix D? Yes ___ No X

Map of wetland unit: Figure ______ Estimated size ______

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I ___ II ___ III X IV ___

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	16
Score for Hydrologic Functions	6
Score for Habitat Functions	12
TOTAL Score for Functions	34

Category based on SPECIAL CHARACTERISTCS of Wetland I ___ II ___ Does not apply X

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	X

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	**YES**	**NO**
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is a Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual).*
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the potential to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) .... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet .... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) .... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure** ___ 1
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area .... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area .... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area .... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area .... points = 0 **Map of Cowardin vegetation classes**	**Figure** ___ 5
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland .... points = 4 • Area seasonally ponded is > 1/4 total area of wetland .... points = 2 • Area seasonally ponded is < 1/4 total area of wetland .... points = 0 **Map of Hydroperiods**	**Figure** ___ 2
	Total for D 1 *Add the points in the boxes above*	8
D 2	**Does the wetland have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __X__ Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other ____ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier 2
◆	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	16
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the potential to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) .... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet .... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .... points = 0	0
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet .... points = 7 • The wetland is a "headwater" wetland .... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet .... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet .... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft .... points = 0	0
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit .... points = 5 • The area of the basin is 10 to 100 times the area of the unit .... points = 3 • The area of the basin is more than 100 times the area of the unit .... points = 0 • Entire unit is in the FLATS class .... points = 5	3
	Total for D 3 *Add the points in the boxes above*	3

D 4	**Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. __X_ Wetland drains to a river or stream that has flooding problems ____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other ________________ YES multiplier is 2 NO multiplier is 1	*(see p. 49)* Multiplier 2 _______
◆	**<u>TOTAL</u> – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	6

Comments:

These questions apply to wetlands of all HGM classes.		**Points**
	HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 score per box)
H 1	**Does the wetland have the <u>potential</u> to provide habitat for many species?**	

H 1.1 Vegetation structure *(see P. 72)*:
Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.
____ Aquatic Bed
____ Emergent plants
X___ Scrub/shrub (areas where shrubs have > 30% cover)
X___ Forested (areas where trees have > 30% cover)
If the unit has a forested class check if:
X___ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon.
Add the number of vegetation types that qualify. If you have: **Map of Cowardin vegetation classes**
4 structures or more .... points = 4
3 structures .... points = 2
2 structures .... points = 1
1 structure .... points = 0

Figure ___

Points: 2

H 1.2 Hydroperiods *(see p.73)*:
Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).
____ Permanently flooded or inundated
X___ Seasonally flooded or inundated
____ Occasionally flooded or inundated
X___ Saturated only
X___ Permanently flowing stream or river in, or adjacent to, the wetland
____ Seasonally flowing stream in, or adjacent to, the wetland
____ **Lake-fringe wetland .... = 2 points**
____ **Freshwater tidal wetland .... = 2 points**

4 or more types present points = 3
3 or more types present...... points = 2
2 types present.................. points = 1
1 type present .... points = 0

Map of hydroperiods

Figure ___

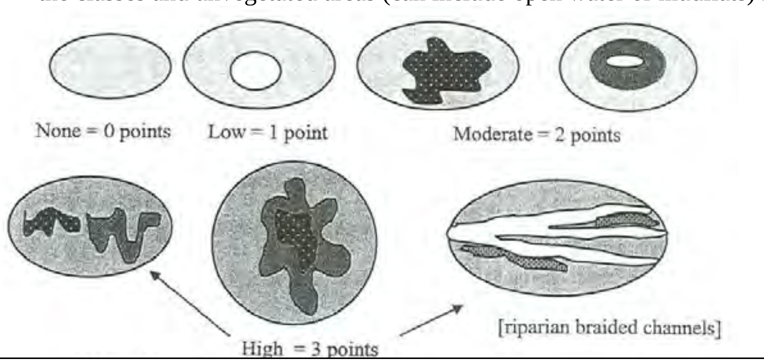
Points: 2

H 1.3 Richness of Plant Species *(see p. 75)*:
Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*
You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted:
> 19 species .... points = 2
5 – 19 species.................... points = 1
< 5 species .... points = 0

List species below if you want to:
____
____
____
____

Points: 1

H 1.4 Interspersion of Habitats *(see p. 76)*:
Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

Figure ___

Points: 1

H 1.5 Special Habitat Features *(see p. 77)*:
Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.
X___ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
____ Standing snags (diameter at the bottom > 4 inches) in the wetland
____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
____ Invasive plants cover less than 25% of the wetland area in each stratum of plants
NOTE: The 20% stated in early printings of the manual on page 78 is an error.

Points: 1

H 1 TOTAL Score – potential for providing habitat *Add the points in the column above* **7**

<table>
<tr><td>H 2</td><td>Does the wetland have the <u>opportunity</u> to provide habitat for many species?</td><td>(only 1 score per box)</td></tr>
<tr><td></td><td>H 2.1 <u>Buffers</u> (see P. 80):
Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of “undisturbed”.
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ points = 5
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference .... points = 4
____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference .... points = 4
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference .... points = 3
____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .... points = 3
If buffer does not meet any of the criteria above:
____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .... points = 2
____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK .... points = 2
____ Heavy grazing in buffer .... points = 1
____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) .... points = 0
<u>X</u>___ Buffer does not meet any of the criteria above .... points = 1
Arial photo showing buffers</td><td>Figure ___

1</td></tr>
<tr><td></td><td>H 2.2 <u>Corridors and Connections</u> (see p. 81)
H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).
YES = 4 points (go to H 2.3) NO = go to H 2.2.2
H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above?
YES = 2 points (go to H 2.3) NO = go to H 2.2.3
H. 2.2.3 Is the wetland:
• Within 5 mi (8km) of a brackish or salt water estuary OR
• Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point
• Within 1 mile of a lake greater than 20 acres? NO = 0 points</td><td>0</td></tr>
</table>

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report* [*http://wdfw.wa.gov/hab/phslist.htm*](http://wdfw.wa.gov/hab/phslist.htm)) Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). __X__ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	1
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile..........points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	5
	TOTAL for H 1 from page 8	7
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	12

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO X	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D ____ or accessed from WNHP/DNR web site ____ YES ____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ____ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO X not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cove*r)? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**<u>Forested Wetlands</u>** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X__ not a forested wetland with special characteristics	**Cat. I**
SC5	**<u>Wetlands in Coastal Lagoons</u>** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**<u>Interdunal Wetlands</u>** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WMT5 Date of site visit: 4/3/12

Rated by: M Maynard Trained by Ecology? Yes X No____ Date of training: 04/06

SEC: 29 TWNSHP: 27N RNGE: 4E Is S/T/R in Appendix D? Yes____ No X

Map of wetland unit: Figure____ Estimated size____

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I____ II____ III X IV____

Category I =	Score > 70	Score for Water Quality Functions	14
Category II =	Score 51 - 69	Score for Hydrologic Functions	7
Category III =	Score 30 – 50	Score for Habitat Functions	9
Category IV =	Score < 30	TOTAL Score for Functions	30

Category based on SPECIAL CHARACTERISTCS of Wetland I____ II____ Does not apply X

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	**YES**	**NO**
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is a Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual).*
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the potential to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) .... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet .... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) .... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure** ___ 2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area .... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area .... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area .... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area .... points = 0 **Map of Cowardin vegetation classes**	**Figure** ___ 5
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland .... points = 4 • Area seasonally ponded is > 1/4 total area of wetland .... points = 2 • Area seasonally ponded is < 1/4 total area of wetland .... points = 0 **Map of Hydroperiods**	**Figure** ___ 0
	Total for D 1 *Add the points in the boxes above*	7
D 2	**Does the wetland have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __X__ Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other ____ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier 2
◆	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	14
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the potential to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) .... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet .... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .... points = 0	2
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet .... points = 7 • The wetland is a "headwater" wetland .... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet .... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet .... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft .... points = 0	0
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit .... points = 5 • The area of the basin is 10 to 100 times the area of the unit .... points = 3 • The area of the basin is more than 100 times the area of the unit .... points = 0 • Entire unit is in the FLATS class .... points = 5	5
	Total for D 3 *Add the points in the boxes above*	7

D 4	**Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. ____ Wetland drains to a river or stream that has flooding problems ____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other ____ YES multiplier is 2 NO multiplier is 1	*(see p. 49)* Multiplier 1
◆	**<u>TOTAL</u> – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	7

Comments:

Wetland name or number ______WMT5 ___________

These questions apply to wetlands of all HGM classes.	**Points** (only 1 score per box)
HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	

H 1 Does the wetland have the potential to provide habitat for many species?

H 1.1 Vegetation structure *(see P. 72)*: **Figure ___**

Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.

____ Aquatic Bed
__X_ Emergent plants
____ Scrub/shrub (areas where shrubs have > 30% cover)
__X_ Forested (areas where trees have > 30% cover)

If the unit has a forested class check if:

____X The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon.

Add the number of vegetation types that qualify. If you have: **Map of Cowardin vegetation classes**

4 structures or more....... points = 4
3 structures.................. points = 2
2 structures................... points = 1
1 structure .... points = 0

Points: 2

H 1.2 Hydroperiods *(see p.73)*: **Figure ___**

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).

____ Permanently flooded or inundated
X___ Seasonally flooded or inundated
____ Occasionally flooded or inundated
X___ Saturated only
____ Permanently flowing stream or river in, or adjacent to, the wetland
____ Seasonally flowing stream in, or adjacent to, the wetland
____ **Lake-fringe wetland................. = 2 points**
____ **Freshwater tidal wetland......... = 2 points**

4 or more types present points = 3
3 or more types present......points = 2
2 types present..................points = 1
1 type present ....points = 0

Map of hydroperiods

Points: 1

H 1.3 Richness of Plant Species *(see p. 75)*:

Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*

You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted:

> 19 species .... points = 2
5 – 19 species................... points = 1
< 5 species .... points = 0

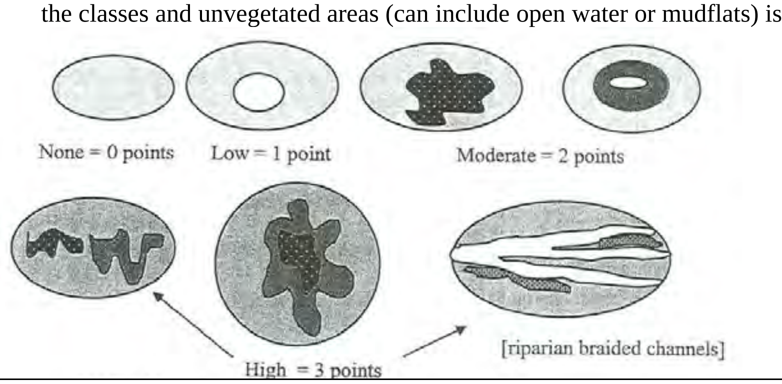
List species below if you want to:

____
____
____
____

Points: 1

H 1.4 Interspersion of Habitats *(see p. 76)*: **Figure ___**

Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

Points: 1

H 1.5 Special Habitat Features *(see p. 77)*:

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
____ Standing snags (diameter at the bottom > 4 inches) in the wetland
____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
____ Invasive plants cover less than 25% of the wetland area in each stratum of plants
NOTE: The 20% stated in early printings of the manual on page 78 is an error.

Points: 0

H 1 TOTAL Score – potential for providing habitat *Add the points in the column above* | **5**

H 2	Does the wetland have the <u>opportunity</u> to provide habitat for many species?	(only 1 score per box)
	H 2.1 <u>Buffers</u> *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ **points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference............ **points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference............ **points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference............ **points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference............ **points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK............ **points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK............ **points = 2** ____ Heavy grazing in buffer............ **points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)............ **points = 0** <u>X</u>___ Buffer does not meet any of the criteria above............ **points = 1** **Arial photo showing buffers**	**Figure ___** 1
	H 2.2 <u>Corridors and Connections</u> *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	0

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). ____ **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*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	0
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile..........points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	4
	TOTAL for H 1 from page 8	5
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	9

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D ________ or accessed from WNHP/DNR web site ________ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ________ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ____X___ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cove*r)? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**<u>Forested Wetlands</u>** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X__ not a forested wetland with special characteristics	**Cat. I**
SC5	**<u>Wetlands in Coastal Lagoons</u>** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**<u>Interdunal Wetlands</u>** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WMT6 Date of site visit: 4/3/12

Rated by: M Maynard Trained by Ecology? Yes X No___ Date of training: 04/06

SEC: 29 TWNSHP: 27N RNGE: 4E Is S/T/R in Appendix D? Yes___ No X

Map of wetland unit: Figure______ Estimated size______

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I___ II___ III X IV___

Category I =	Score > 70	Score for Water Quality Functions	14
Category II =	Score 51 - 69	Score for Hydrologic Functions	7
Category III =	Score 30 – 50	Score for Habitat Functions	9
Category IV =	Score < 30	TOTAL Score for Functions	30

Category based on SPECIAL CHARACTERISTCS of Wetland I___ II___ Does not apply X

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection **(in addition to the protection recommended for its category)**	**YES**	**NO**
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is a Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual).*
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the <u>potential</u> to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) .... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet .... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) .... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure** ___ 2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area .... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area .... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area .... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area .... points = 0 **Map of Cowardin vegetation classes**	**Figure** ___ 5
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland .... points = 4 • Area seasonally ponded is > 1/4 total area of wetland .... points = 2 • Area seasonally ponded is < 1/4 total area of wetland .... points = 0 **Map of Hydroperiods**	**Figure** ___ 0
	Total for D 1 *Add the points in the boxes above*	7
D 2	**Does the wetland have the <u>opportunity</u> to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __X__ Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other ____________ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier 2
◆	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	14
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the <u>potential</u> to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) .... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet .... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .... points = 0	2
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet .... points = 7 • The wetland is a "headwater" wetland .... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet .... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet .... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft .... points = 0	0
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit .... points = 5 • The area of the basin is 10 to 100 times the area of the unit .... points = 3 • The area of the basin is more than 100 times the area of the unit .... points = 0 • Entire unit is in the FLATS class .... points = 5	5
	Total for D 3 *Add the points in the boxes above*	7

D 4	**Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. ____ Wetland drains to a river or stream that has flooding problems ____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other ____________________ YES multiplier is 2 NO multiplier is 1	*(see p. 49)* Multiplier 1
◆	**<u>TOTAL</u> – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	7

Comments:

These questions apply to wetlands of all HGM classes.		**Points**
	HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 score per box)
H 1	**Does the wetland have the potential to provide habitat for many species?**	

H 1.1 Vegetation structure *(see P. 72)*:

Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.

____ Aquatic Bed
____ Emergent plants
____ Scrub/shrub (areas where shrubs have > 30% cover)
__X__ Forested (areas where trees have > 30% cover)

If the unit has a forested class check if:

X___ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon.

Add the number of vegetation types that qualify. If you have: **Map of Cowardin vegetation classes**

4 structures or more....... points = 4 | 3 structures.................. points = 2
2 structures................... points = 1 | 1 structure .... points = 0

Figure ___ | Points: 1

H 1.2 Hydroperiods *(see p.73)*:

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).

____ Permanently flooded or inundated | 4 or more types present points = 3
X___ Seasonally flooded or inundated | 3 or more types present......points = 2
____ Occasionally flooded or inundated | 2 types present..................points = 1
X___ Saturated only | 1 type present ....points = 0
____ Permanently flowing stream or river in, or adjacent to, the wetland
____ Seasonally flowing stream in, or adjacent to, the wetland
____ **Lake-fringe wetland................ = 2 points**
____ **Freshwater tidal wetland......... = 2 points**

Map of hydroperiods

Figure ___ | Points: 1

H 1.3 Richness of Plant Species *(see p. 75)*:

Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*

You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted:

> 19 species .... points = 2
5 – 19 species.................... points = 1
< 5 species .... points = 0

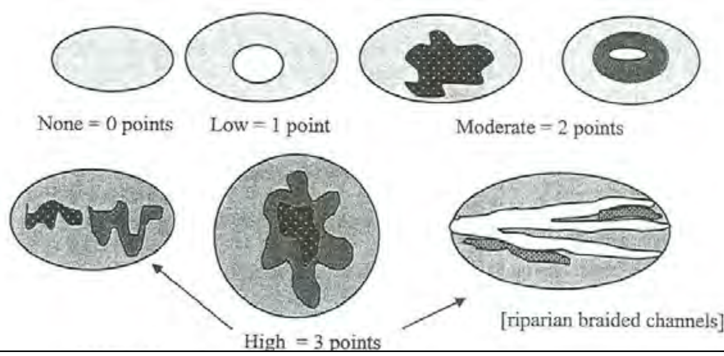
List species below if you want to:

____
____
____
____

Points: 1

H 1.4 Interspersion of Habitats *(see p. 76)*:

Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

Figure ___ | Points: 0

H 1.5 Special Habitat Features *(see p. 77)*:

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

X___ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
X___ Standing snags (diameter at the bottom > 4 inches) in the wetland
____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
____ Invasive plants cover less than 25% of the wetland area in each stratum of plants
NOTE: The 20% stated in early printings of the manual on page 78 is an error.

Points: 2

H 1 TOTAL Score – potential for providing habitat *Add the points in the column above* | 5

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ **points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference.......... **points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference.......... **points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference.......... **points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .... **points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .... **points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK.......... **points = 2** ____ Heavy grazing in buffer .... **points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland).......... **points = 0** X___ Buffer does not meet any of the criteria above .... **points = 1** **Arial photo showing buffers**	**Figure ___** 1
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	0

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). ____ **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*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	0
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile..........points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	4
	TOTAL for H 1 from page 8	5
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	9

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D ________ or accessed from WNHP/DNR web site ________ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ________ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ____X__ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cove*r)? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X_ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

Wetland name or number WMT7

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WMT7 Date of site visit: 4/3/12

Rated by: M Maynard Trained by Ecology? Yes X No ___ Date of training: 04/06

SEC: 28 TWNSHP: 27N RNGE: 4E Is S/T/R in Appendix D? Yes ___ No X

Map of wetland unit: Figure ______ Estimated size ______

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I ___ II ___ III ___ IV X

Category I =	Score > 70	Score for Water Quality Functions	12
Category II =	Score 51 - 69	Score for Hydrologic Functions	7
Category III =	Score 30 – 50	Score for Habitat Functions	8
Category IV =	Score < 30	TOTAL Score for Functions	27

Category based on SPECIAL CHARACTERISTCS of Wetland I ___ II ___ Does not apply X

Final Category (choose the "highest" category from above") IV

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

<u>To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.</u>

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual).*
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points (only 1 score per box)
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	
D 1	**Does the wetland have the potential to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) .... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet .... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) .... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure ___** 2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area .... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area .... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area .... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area .... points = 0 **Map of Cowardin vegetation classes**	**Figure ___** 5
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland .... points = 4 • Area seasonally ponded is > 1/4 total area of wetland .... points = 2 • Area seasonally ponded is < 1/4 total area of wetland .... points = 0 **Map of Hydroperiods**	**Figure ___** 0
	Total for D 1 *Add the points in the boxes above*	7
D 2	**Does the wetland have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __X_ Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other ________ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier 2
◆	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	14
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the potential to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) .... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet .... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .... points = 0	2
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet .... points = 7 • The wetland is a "headwater" wetland .... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet .... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet .... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft .... points = 0	0
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit .... points = 5 • The area of the basin is 10 to 100 times the area of the unit .... points = 3 • The area of the basin is more than 100 times the area of the unit .... points = 0 • Entire unit is in the FLATS class .... points = 5	5
	Total for D 3 *Add the points in the boxes above*	7

D 4	**Does the wetland have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. ____ Wetland drains to a river or stream that has flooding problems ____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other ____________________ YES multiplier is 2 NO multiplier is 1	*(see p. 49)* Multiplier 1
◆	**TOTAL – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	7

Comments:

Wetland name or number WMT7

These questions apply to wetlands of all HGM classes.	Points
HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 score per box)

H 1 Does the wetland have the <u>potential</u> to provide habitat for many species?

H 1.1 <u>Vegetation structure</u> *(see P. 72)*: — **Figure ___**

Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.

- ____ Aquatic Bed
- ____ Emergent plants
- ____ Scrub/shrub (areas where shrubs have > 30% cover)
- X Forested (areas where trees have > 30% cover)

If the unit has a forested class check if:

- X The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon.

Add the number of vegetation types that qualify. If you have: **Map of Cowardin vegetation classes**

4 structures or more....... points = 4 | 3 structures.................. points = 2
2 structures................... points = 1 | 1 structure .... points = 0

Points: 1

H 1.2 <u>Hydroperiods</u> *(see p.73)*: — **Figure ___**

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).

- ____ Permanently flooded or inundated — 4 or more types present points = 3
- X Seasonally flooded or inundated — 3 or more types present......points = 2
- ____ Occasionally flooded or inundated — 2 types present..................points = 1
- X Saturated only — 1 type present ....points = 0
- ____ Permanently flowing stream or river in, or adjacent to, the wetland
- ____ Seasonally flowing stream in, or adjacent to, the wetland
- ____ **Lake-fringe wetland................. = 2 points**
- ____ **Freshwater tidal wetland......... = 2 points**

Map of hydroperiods

Points: 1

H 1.3 <u>Richness of Plant Species</u> *(see p. 75)*:

Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*

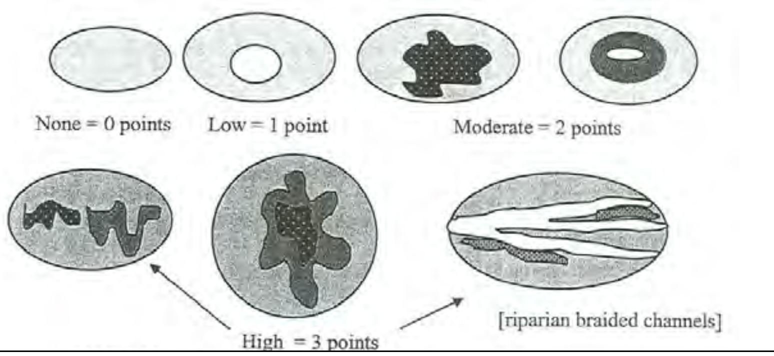
You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted: > 19 species .... points = 2
5 – 19 species.................... points = 1
< 5 species .... points = 0

List species below if you want to:

Points: 1

H 1.4 Interspersion of Habitats *(see p. 76)*: — **Figure ___**

Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

Points: 0

H 1.5 <u>Special Habitat Features</u> *(see p. 77)*:

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

- X Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
- ____ Standing snags (diameter at the bottom > 4 inches) in the wetland
- ____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
- ____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
- ____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
- ____ Invasive plants cover less than 25% of the wetland area in each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*

Points: 1

H 1 TOTAL Score – potential for providing habitat *Add the points in the column above* — 4

H 2	**Does the wetland have the opportunity to provide habitat for many species?**	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ **points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference........ **points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference........ **points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference........ **points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .... **points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .... **points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK........ **points = 2** ____ Heavy grazing in buffer .... **points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)........ **points = 0** ____X Buffer does not meet any of the criteria above........ **points = 1** **Arial photo showing buffers**	**Figure ___** 1
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	0

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). ____ **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*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	0
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile..........points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	4
	TOTAL for H 1 from page 8	4
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	8

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D _______ or accessed from WNHP/DNR web site _______ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO _______ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ___X___ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cove*r)? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**<u>Forested Wetlands</u>** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X__ not a forested wetland with special characteristics	**Cat. I**
SC5	**<u>Wetlands in Coastal Lagoons</u>** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**<u>Interdunal Wetlands</u>** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WMT8 Date of site visit: 4/3/12

Rated by: M Maynard Trained by Ecology? Yes X No___ Date of training: 04/06

SEC: 28 TWNSHP: 27N RNGE: 4E Is S/T/R in Appendix D? Yes___ No X

Map of wetland unit: Figure______ Estimated size______

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I____ II____ III____ IV X

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	4
Score for Hydrologic Functions	3
Score for Habitat Functions	8
TOTAL Score for Functions	15

Category based on SPECIAL CHARACTERISTCS of Wetland I____ II____ Does not apply X

Final Category (choose the "highest" category from above") IV

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics	
Estuarine	
Natural Heritage Wetland	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	X

Wetland HGM Class used for Rating	
Depressional	
Riverine	
Lake-fringe	
Slope	X
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection **(in addition to the protection recommended for its category)**	**YES**	**NO**
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

<u>To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.</u>

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is a Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual).*
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

S	Slope Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
S 1	**Does the wetland have the <u>potential</u> to improve water quality?**	*(see p.64)*
	S 1.1 Characteristics of average slope of unit: • Slope is 1% or less *(a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance)* .... points = 3 • Slope is 1% - 2% .... points = 2 • Slope is 2% - 5%. .... points = 1 • Slope is greater than 5% .... points = 0	1
	S 1.2 The soil 2 inches below the surface (or duff layer) is clay, organic *(Use NRCS definitions).* YES = 3 points NO = 0 points	0
	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* • Dense, uncut, herbaceous vegetation > 90% of the wetland area......... points = 6 • Dense, uncut, herbaceous vegetation > 1/2 of area .... points = 3 • Dense, woody, vegetation > 1/2 of area......... points = 2 • Dense, uncut, herbaceous vegetation > 1/4 of area .... points = 1 • Does not meet any of the criteria above for vegetation .... points = 0 **Aerial photo or map with vegetation polygons**	**Figure ___** 1
	Total for S 1 *Add the points in the boxes above*	2
S 2	**Does the wetland have the <u>opportunity</u> to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields, logging, or orchards within 150 ft. of wetland _X_ Residential, urban areas, or golf courses are within 150 ft. upslope of wetland ____ Other ________ YES multiplier is 2 NO multiplier is 1	*(see p. 67)* Multiplier 2
◆	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from S1 by S2; then ***add score to table on p. 1***	4
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.	
S 3	**Does the wetland have the <u>potential</u> to reduce flooding and stream erosion?**	*(see p.68)*
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms: *Choose the points appropriate for the description that best fits conditions in the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough to remain erect during surface flows).* • Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland .... points = 6 • Dense, uncut, **rigid** vegetation> 1/2 area of wetland......... points = 3 • Dense, uncut, **rigid** vegetation > 1/4 area......... points = 1 • More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid .... points = 0	1
	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows. The slope has small surface depressions that can retain water over at least 10% of its area. YES = 2 points NO = 0 points	2
	Add the points in the boxes above	3
S 4	**Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ____ Wetland has surface runoff that drains to a river or stream that has flooding problems ____ Other ________ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* YES multiplier is 2 NO multiplier is 1	*(see p. 70)* Multiplier 1
◆	**<u>TOTAL</u> – Hydrologic Functions** Multiply the score from S3 by S4; then ***add score to table on p. 1***	3

Comments:

Wetland name or number ____WMT8____________

These questions apply to wetlands of all HGM classes.	**Points**
HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 score per box)

H 1 Does the wetland have the potential to provide habitat for many species?

H 1.1 Vegetation structure *(see P. 72)*:

Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.

____ Aquatic Bed
____ Emergent plants
____ Scrub/shrub (areas where shrubs have > 30% cover)
X___ Forested (areas where trees have > 30% cover)

If the unit has a forested class check if:

X___ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon.

Add the number of vegetation types that qualify. If you have: **Map of Cowardin vegetation classes**

4 structures or more....... points = 4 | 3 structures.................. points = 2
2 structures................... points = 1 | 1 structure .... points = 0

Figure ___ Points: 1

H 1.2 Hydroperiods *(see p.73)*:

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).

____ Permanently flooded or inundated — 4 or more types present points = 3
X___ Seasonally flooded or inundated — 3 or more types present......points = 2
____ Occasionally flooded or inundated — 2 types present..................points = 1
X___ Saturated only — 1 type present ....points = 0
____ Permanently flowing stream or river in, or adjacent to, the wetland
____ Seasonally flowing stream in, or adjacent to, the wetland
____ **Lake-fringe wetland................ = 2 points**
____ **Freshwater tidal wetland......... = 2 points** **Map of hydroperiods**

Figure ___ Points: 1

H 1.3 Richness of Plant Species *(see p. 75)*:

Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*

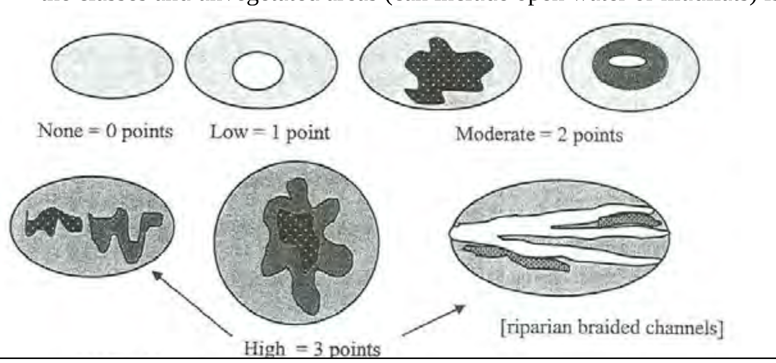
You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted: > 19 species .... points = 2
5 – 19 species................... points = 1
List species below if you want to: < 5 species .... points = 0

____
____
____
____

Points: 1

H 1.4 Interspersion of Habitats *(see p. 76)*:

Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

Figure ___ Points: 0

H 1.5 Special Habitat Features *(see p. 77)*:

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
____ Standing snags (diameter at the bottom > 4 inches) in the wetland
____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
X___ Invasive plants cover less than 25% of the wetland area in each stratum of plants
NOTE: The 20% stated in early printings of the manual on page 78 is an error.

Points: 1

H 1 TOTAL Score – potential for providing habitat *Add the points in the column above* **4**

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............ **points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference.. **points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference.. **points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference.. **points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .... **points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .... **points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK.. **points = 2** ____ Heavy grazing in buffer .... **points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)............................ **points = 0** X___ Buffer does not meet any of the criteria above .... **points = 1** **Arial photo showing buffers**	**Figure ___** 1
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	0

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report* *http://wdfw.wa.gov/hab/phslist.htm*) Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). ____ **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*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	0
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile..........points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	4
	TOTAL for H 1 from page 8	4
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	8

Comments:

Wetland name or number ____WMT8____________

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D _______ or accessed from WNHP/DNR web site _______ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO _______ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ___X___ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)*? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**<u>Forested Wetlands</u>** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X__ not a forested wetland with special characteristics	**Cat. I**
SC5	**<u>Wetlands in Coastal Lagoons</u>** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**<u>Interdunal Wetlands</u>** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WLY3 Date of site visit: 4/5/12

Rated by: M Maynard Trained by Ecology? Yes X No___ Date of training: 04/06

SEC: 21 TWNSHP: 27N RNGE: 4E Is S/T/R in Appendix D? Yes___ No X

Map of wetland unit: Figure______ Estimated size______

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I___ II___ III X IV___

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	18
Score for Hydrologic Functions	8
Score for Habitat Functions	9
TOTAL Score for Functions	35

Category based on SPECIAL CHARACTERISTCS of Wetland I___ II___ Does not apply X

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics	
Estuarine	
Natural Heritage Wetland	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	X

Wetland HGM Class used for Rating	
Depressional	X
Riverine	
Lake-fringe	
Slope	
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

<u>To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.</u>

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual)*.
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

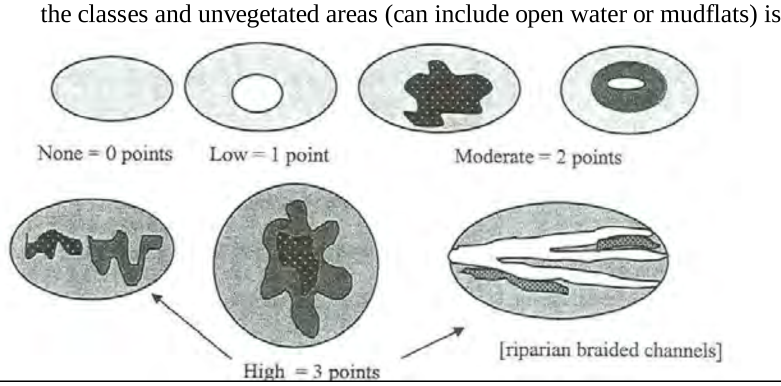
If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the <u>potential</u> to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) .... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet .... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) .... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure ___** 2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area .... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area .... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area .... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area .... points = 0 **Map of Cowardin vegetation classes**	**Figure ___** 3
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland .... points = 4 • Area seasonally ponded is > 1/4 total area of wetland .... points = 2 • Area seasonally ponded is < 1/4 total area of wetland .... points = 0 **Map of Hydroperiods**	**Figure ___** 4
	Total for D 1 *Add the points in the boxes above*	9
D 2	**Does the wetland have the <u>opportunity</u> to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __X Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other ____________ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier 2
◆	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	18
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the <u>potential</u> to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) .... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet .... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .... points = 0	2
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet .... points = 7 • The wetland is a "headwater" wetland .... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet .... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet .... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water. points = 1 • Marks of ponding less than 0.5 ft .... points = 0	3
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit .... points = 5 • The area of the basin is 10 to 100 times the area of the unit .... points = 3 • The area of the basin is more than 100 times the area of the unit .... points = 0 • Entire unit is in the FLATS class .... points = 5	3
	Total for D 3 *Add the points in the boxes above*	8

D 4	**Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. ____ Wetland drains to a river or stream that has flooding problems ____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other ______________________________ YES multiplier is 2 NO multiplier is 1	*(see p. 49)* Multiplier 1 ________
◆	**<u>TOTAL</u> – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	8

Comments:

Wetland name or number ________WLY3 ___________

These questions apply to wetlands of all HGM classes.		Points (only 1 score per box)
	HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	
H 1	**Does the wetland have the potential to provide habitat for many species?**	
	H 1.1 Vegetation structure *(see P. 72)*: *Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____ Aquatic Bed ____ Emergent plants __X_ Scrub/shrub (areas where shrubs have > 30% cover) ____ Forested (areas where trees have > 30% cover) *If the unit has a forested class check if:* ____ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. *Add the number of vegetation types that qualify. If you have:* **Map of Cowardin vegetation classes** 4 structures or more....... points = 4 3 structures.................. points = 2 2 structures.................... points = 1 1 structure .... points = 0	**Figure ___** 0
	H 1.2 Hydroperiods *(see p.73)*: *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).* ____ Permanently flooded or inundated 4 or more types present points = 3 X___ Seasonally flooded or inundated 3 or more types present......points = 2 X___ Occasionally flooded or inundated 2 types present..................points = 1 X___ Saturated only 1 type present ....points = 0 ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ **Lake-fringe wetland................. = 2 points** ____ **Freshwater tidal wetland......... = 2 points** **Map of hydroperiods**	**Figure ___** 2
	H 1.3 Richness of Plant Species *(see p. 75)*: Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.* If you counted: > 19 species .... points = 2 5 – 19 species.................... points = 1 List species below if you want to: < 5 species .... points = 0 ________________________________ ________________________________ ________________________________ ________________________________	1
	H 1.4 Interspersion of Habitats *(see p. 76)*: Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". **Use map of Cowardin classes.**	**Figure ___** 1
	H 1.5 Special Habitat Features *(see p. 77)*: *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ____ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) ____ Standing snags (diameter at the bottom > 4 inches) in the wetland ____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) ____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* X___ Invasive plants cover less than 25% of the wetland area in each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	1
	H 1 TOTAL Score – potential for providing habitat *Add the points in the column above*	5

H 2	**Does the wetland have the opportunity to provide habitat for many species?**	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use).............**points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference.............**points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference.............**points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference.............**points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference.............**points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK.............**points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK.............**points = 2** ____ Heavy grazing in buffer.............**points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland).............**points = 0** X___ Buffer does not meet any of the criteria above.............**points = 1** **Arial photo showing buffers**	**Figure ___** 1
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	0

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). ____ **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*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	0
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ......points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ......points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile......points = 3 • There is at least 1 wetland within 1/2 mile ......points = 2 • There are no wetlands within 1/2 mile......points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	4
	TOTAL for H 1 from page 8	5
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	9

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D _______ or accessed from WNHP/DNR web site _______ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO _______ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ___X__ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)*? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**<u>Forested Wetlands</u>** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X_ not a forested wetland with special characteristics	**Cat. I**
SC5	**<u>Wetlands in Coastal Lagoons</u>** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**<u>Interdunal Wetlands</u>** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WLY4 Date of site visit: 4/9/12

Rated by: M Maynard Trained by Ecology? Yes X No____ Date of training: 04/06

SEC: 21 TWNSHP: 27N RNGE: 4E Is S/T/R in Appendix D? Yes______ No X

Map of wetland unit: Figure______________ Estimated size_____________

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I__________ II X III__________ IV__________

Category I =	Score > 70	Score for Water Quality Functions	26
Category II =	Score 51 - 69	Score for Hydrologic Functions	20
Category III =	Score 30 – 50	Score for Habitat Functions	21
Category IV =	Score < 30	TOTAL Score for Functions	67

Category based on SPECIAL CHARACTERISTCS of Wetland I_________ II_________ Does not apply X

Final Category (choose the "highest" category from above") II

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	X

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	**YES**	**NO**
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

<u>To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.</u>

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual)*.
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the <u>potential</u> to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) .... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet .... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) .... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure ___** 2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	4
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area .... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area .... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area .... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area .... points = 0 **Map of Cowardin vegetation classes**	**Figure ___** 5
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland .... points = 4 • Area seasonally ponded is > 1/4 total area of wetland .... points = 2 • Area seasonally ponded is < 1/4 total area of wetland .... points = 0 **Map of Hydroperiods**	**Figure ___** 2
	Total for D 1 *Add the points in the boxes above*	13
D 2	**Does the wetland have the <u>opportunity</u> to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __X_ Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other ________________ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier 2
◆	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	26
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the <u>potential</u> to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) .... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet .... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .... points = 0	2
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet .... points = 7 • The wetland is a "headwater" wetland .... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet .... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet .... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water. points = 1 • Marks of ponding less than 0.5 ft .... points = 0	3
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit .... points = 5 • The area of the basin is 10 to 100 times the area of the unit .... points = 3 • The area of the basin is more than 100 times the area of the unit .... points = 0 • Entire unit is in the FLATS class .... points = 5	5
	Total for D 3 *Add the points in the boxes above*	10

D 4	**Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. X___ Wetland drains to a river or stream that has flooding problems ____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other ____________________ YES multiplier is 2 NO multiplier is 1	*(see p. 49)* Multiplier 2
◆	**<u>TOTAL</u> – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	20

Comments:

These questions apply to wetlands of all HGM classes.	**Points**
HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	(only 1 score per box)

H 1 Does the wetland have the potential to provide habitat for many species?

H 1.1 Vegetation structure *(see P. 72)*: **Figure ___**

Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.

____ Aquatic Bed
__X__ Emergent plants
__X__ Scrub/shrub (areas where shrubs have > 30% cover)
__X__ Forested (areas where trees have > 30% cover)

If the unit has a forested class check if:

X The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon.

Add the number of vegetation types that qualify. If you have: **Map of Cowardin vegetation classes**

4 structures or more .... points = 4 | 3 structures .... points = 2
2 structures .... points = 1 | 1 structure .... points = 0

Points: 4

H 1.2 Hydroperiods *(see p.73)*: **Figure ___**

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).

____ Permanently flooded or inundated — 4 or more types present points = 3
__X__ Seasonally flooded or inundated — 3 or more types present...... points = 2
__X__ Occasionally flooded or inundated — 2 types present.................. points = 1
__X__ Saturated only — 1 type present .... points = 0
__X__ Permanently flowing stream or river in, or adjacent to, the wetland
____ Seasonally flowing stream in, or adjacent to, the wetland
____ **Lake-fringe wetland................. = 2 points**
____ **Freshwater tidal wetland......... = 2 points**

Map of hydroperiods

Points: 3

H 1.3 Richness of Plant Species *(see p. 75)*:

Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*
You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted:

> 19 species .... points = 2
5 – 19 species.................... points = 1
< 5 species .... points = 0

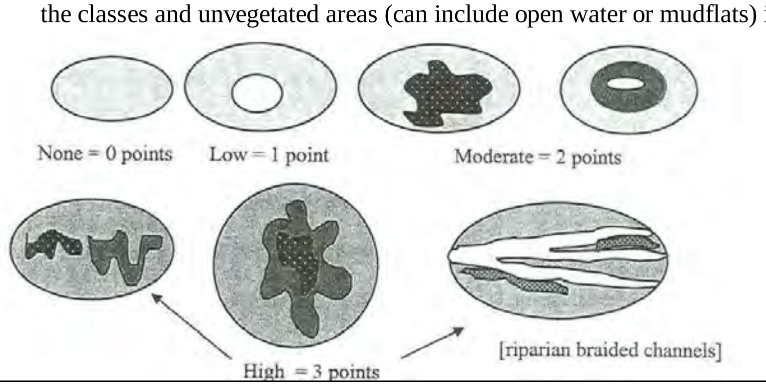
List species below if you want to:

____
____
____
____

Points: 1

H 1.4 Interspersion of Habitats *(see p. 76)*: **Figure ___**

Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

Points: 3

H 1.5 Special Habitat Features *(see p. 77)*:

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

X___ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
__X__ Standing snags (diameter at the bottom > 4 inches) in the wetland
____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
X___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
X___ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
X___ Invasive plants cover less than 25% of the wetland area in each stratum of plants
NOTE: The 20% stated in early printings of the manual on page 78 is an error.

Points: 5

H 1 TOTAL Score – potential for providing habitat *Add the points in the column above* — 16

<table>
<tr><th>H 2</th><th>Does the wetland have the <u>opportunity</u> to provide habitat for many species?</th><th>(only 1 score per box)</th></tr>
<tr><td></td><td>H 2.1 <u>Buffers</u> (see P. 80):
Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of “undisturbed”.
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use).............points = 5
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference........points = 4
____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference........points = 4
____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference........points = 3
____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference........points = 3
If buffer does not meet any of the criteria above:
____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK........points = 2
____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK........points = 2
____ Heavy grazing in buffer........points = 1
____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)........points = 0
__X_ Buffer does not meet any of the criteria above........points = 1
Arial photo showing buffers</td><td>Figure ___

1</td></tr>
<tr><td></td><td>H 2.2 <u>Corridors and Connections</u> (see p. 81)
H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).
YES = 4 points (go to H 2.3) NO = go to H 2.2.2
H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? OR a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above?
YES = 2 points (go to H 2.3) NO = go to H 2.2.3
H. 2.2.3 Is the wetland:
• Within 5 mi (8km) of a brackish or salt water estuary OR
• Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point
• Within 1 mile of a lake greater than 20 acres? NO = 0 points</td><td>0</td></tr>
</table>

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report* *http://wdfw.wa.gov/hab/phslist.htm*) Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). ____ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*). __X__ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	1
	H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile....points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile....points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	5
	TOTAL for H 1 from page 8	16
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	21

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D _______ or accessed from WNHP/DNR web site _______ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO _______ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ___X___ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cove*r)? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X_ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct. 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): WLY6 Date of site visit: 4/17/12

Rated by: M Maynard Trained by Ecology? Yes X No ____ Date of training: 04/06

SEC: 21 TWNSHP: 27N RNGE: 4E Is S/T/R in Appendix D? Yes ____ No X

Map of wetland unit: Figure ____ Estimated size ____

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I ____ II ____ III X IV ____

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	24
Score for Hydrologic Functions	7
Score for Habitat Functions	8
TOTAL Score for Functions	39

Category based on SPECIAL CHARACTERISTCS of Wetland I ____ II ____ Does not apply X

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics	
Estuarine	
Natural Heritage Wetland	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	X

Wetland HGM Class used for Rating	
Depressional	X
Riverine	
Lake-fringe	
Slope	
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection **(in addition to the protection recommended for its category)**	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

<u>To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.</u>

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   ______ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   ______ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ______ The wetland is on a slope *(slope can be very gradual)*.
   ______ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ______ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   ______ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   ______ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D	Depressional and Flat Wetlands	Points
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	(only 1 score per box)
D 1	**Does the wetland have the <u>potential</u> to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) .... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet .... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) .... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	**Figure ___** 3
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) YES points = 4 NO points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area .... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area .... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area .... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area .... points = 0 **Map of Cowardin vegetation classes**	**Figure ___** 5
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland .... points = 4 • Area seasonally ponded is > 1/4 total area of wetland .... points = 2 • Area seasonally ponded is < 1/4 total area of wetland .... points = 0 **Map of Hydroperiods**	**Figure ___** 4
	Total for D 1 *Add the points in the boxes above*	12
D 2	**Does the wetland have the <u>opportunity</u> to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ____ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland ____ Tilled fields or orchards within 150 ft. of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging X___ Residential, urban areas, golf courses are within 150 ft. of wetland ____ Wetland is fed by groundwater high in phosphorus or nitrogen ____ Other ____________ YES multiplier is 2 NO multiplier is 1	*(see p. 44)* Multiplier 2
◆	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	24
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the <u>potential</u> to reduce flooding and erosion?**	*(see p.46)*
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) .... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet .... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch .... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* .... points = 0	4
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet .... points = 7 • The wetland is a "headwater" wetland .... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet .... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet .... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water. points = 1 • Marks of ponding less than 0.5 ft .... points = 0	0
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit .... points = 5 • The area of the basin is 10 to 100 times the area of the unit .... points = 3 • The area of the basin is more than 100 times the area of the unit .... points = 0 • Entire unit is in the FLATS class .... points = 5	3
	Total for D 3 *Add the points in the boxes above*	7

D 4	**Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. ____ Wetland drains to a river or stream that has flooding problems ____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other ______________________________ YES multiplier is 2 NO multiplier is 1	*(see p. 49)* Multiplier 1 ________
◆	**<u>TOTAL</u> – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	7

Comments:

Wetland name or number ________WLY6 ___________

These questions apply to wetlands of all HGM classes. — **Points** (only 1 score per box)

HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.

H 1 Does the wetland have the potential to provide habitat for many species?

H 1.1 Vegetation structure *(see P. 72)*:

Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.

Figure ___

____ Aquatic Bed
____ Emergent plants
____ Scrub/shrub (areas where shrubs have > 30% cover)
X___ Forested (areas where trees have > 30% cover)

If the unit has a forested class check if:

X___ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon.

Add the number of vegetation types that qualify. If you have: **Map of Cowardin vegetation classes**

4 structures or more....... points = 4
3 structures.................. points = 2
2 structures................... points = 1
1 structure .... points = 0

Points: 1

H 1.2 Hydroperiods *(see p.73)*:

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).

Figure ___

____ Permanently flooded or inundated — 4 or more types present points = 3
X___ Seasonally flooded or inundated — 3 or more types present......points = 2
____ Occasionally flooded or inundated — 2 types present..................points = 1
X___ Saturated only — 1 type present ....points = 0
____ Permanently flowing stream or river in, or adjacent to, the wetland
____ Seasonally flowing stream in, or adjacent to, the wetland
____ **Lake-fringe wetland................ = 2 points**
____ **Freshwater tidal wetland......... = 2 points**

Map of hydroperiods

Points: 1

H 1.3 Richness of Plant Species *(see p. 75)*:

Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)*

You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle. If you counted:

> 19 species .... points = 2
5 – 19 species................... points = 1
< 5 species .... points = 0

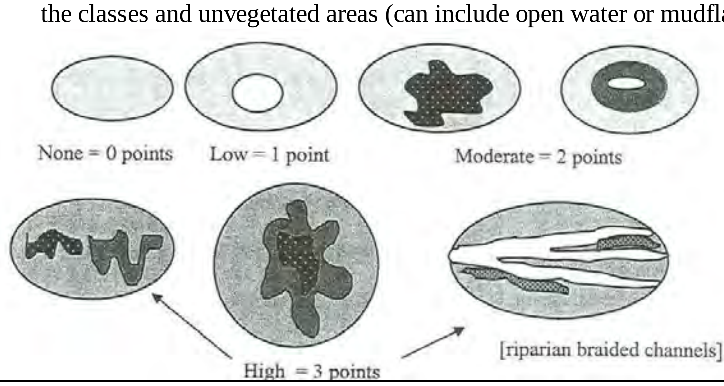
List species below if you want to:

____
____
____
____

Points: 1

H 1.4 Interspersion of Habitats *(see p. 76)*:

Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high".

Use map of Cowardin classes.

Figure ___

Points: 0

H 1.5 Special Habitat Features *(see p. 77)*:

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

X___ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long)
____ Standing snags (diameter at the bottom > 4 inches) in the wetland
____ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m)
____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*
____ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
____ Invasive plants cover less than 25% of the wetland area in each stratum of plants
NOTE: The 20% stated in early printings of the manual on page 78 is an error.

Points: 1

H 1 TOTAL Score – potential for providing habitat — *Add the points in the column above* — 4

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use)............. **points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference .... **points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference .... **points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference .... **points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .... **points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK .... **points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK .... **points = 2** ____ Heavy grazing in buffer .... **points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) .... **points = 0** X___ Buffer does not meet any of the criteria above .... **points = 1** **Arial photo showing buffers**	**Figure ___** 1
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** (go to H 2.3) NO = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (go to H 2.3) NO = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR YES = 1 point • Within 1 mile of a lake greater than 20 acres? NO = 0 points	0

Comments:

	H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82): *(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)* Which of the following priority habitats are within 330 ft. (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ____ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ____ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ____ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). ____ **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*). ____ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ____ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. If wetland has **3 or more** priority habitats **= 4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat **= 1 point** No habitats = 0 points Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)	0
	H 2.4 Wetland Landscape: *Choose the* ***one*** *description of the landscape around the wetland that best fits (see p. 84)* • There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..........points = 5 • The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ....points = 5 • There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ....points = 3 • The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile....................points = 3 • There is at least 1 wetland within 1/2 mile ....points = 2 • There are no wetlands within 1/2 mile....................points = 0	3
	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	4
	TOTAL for H 1 from page 8	4
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	8

Comments:

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ____ The dominant water regime is tidal, ____ Vegetated, and ____ With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO __X__	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? YES = Category I NO = Category II ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ____ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D _______ or accessed from WNHP/DNR web site _______ YES _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 NO _______ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 NO ___X__ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? YES = go to question 3 NO = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? YES = go to question 3 NO = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? YES = Is a bog for purpose of rating NO = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cove*r)? YES = Category I NO = Is not a bog for purpose of rating	**Cat. I**

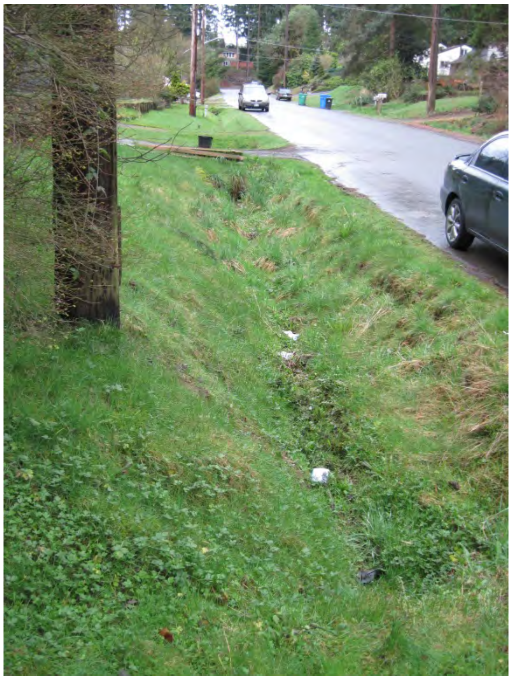
SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO = __X_ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* YES = Go to SC 5.1 NO __X__ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) YES = Category I NO = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES = Go to SC 6.1 NO __X__ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? YES = Category II NO = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p. 1	**NA**

Comments:

APPENDIX C

Stream Photographs

Photograph 1. Thornton Creek near I-5 facing upstream (north).



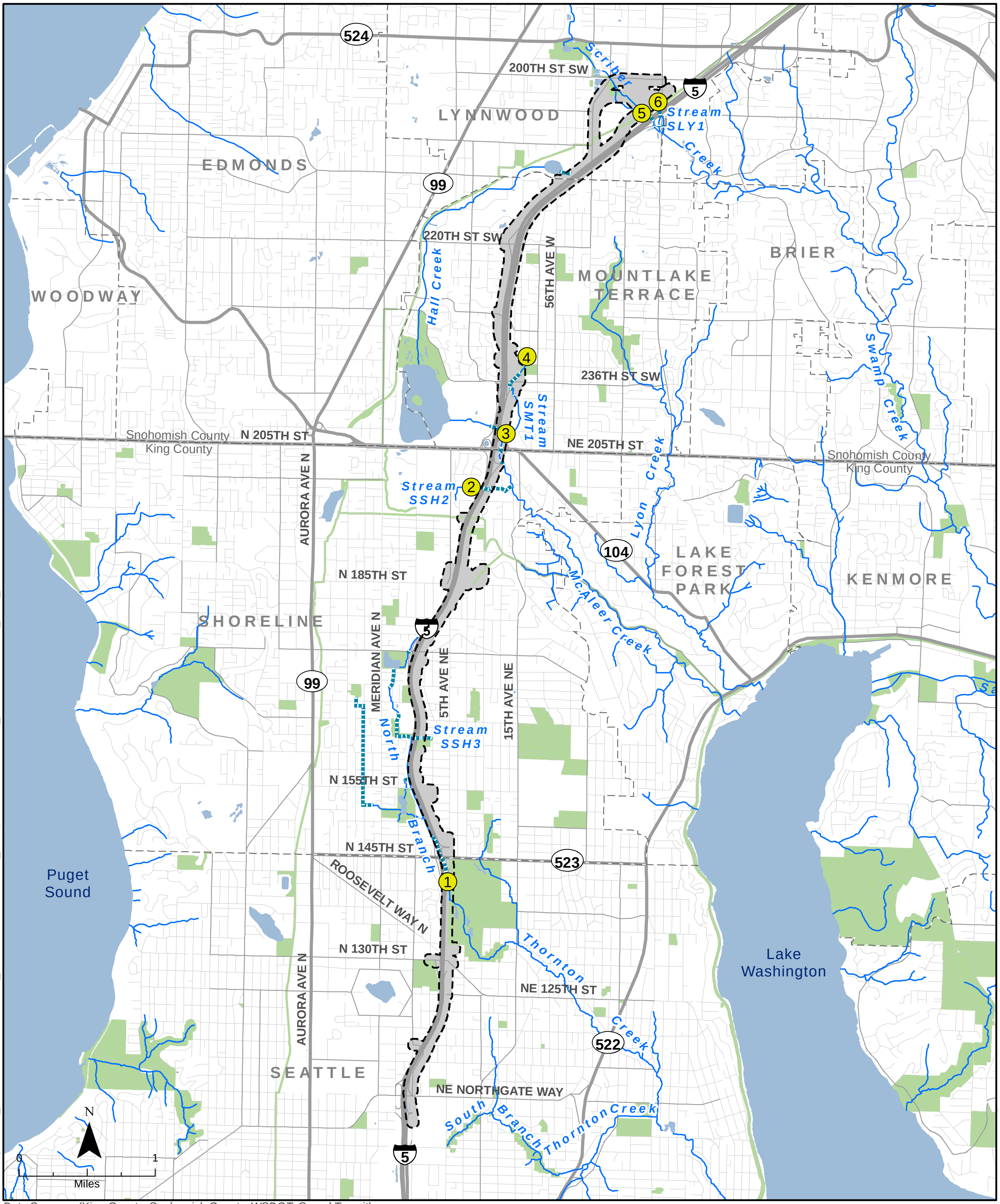
Photograph 2. Stream SSH3 along 200th Street, west of I-5 facing upstream (west).

Photograph 3. McAleer Creek from culvert facing downstream (south).

Photograph 4. Stream SMT1 in the park from inlet at north end facing downstream (south).

Photograph 5. Scriber Creek facing downstream (south).

Photograph 6. Stream (SLY1) approximately 100 feet downstream from inlet facing upstream (north).



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Data Sources: (King County, Snohomish County, WSDOT, Sound Transit)

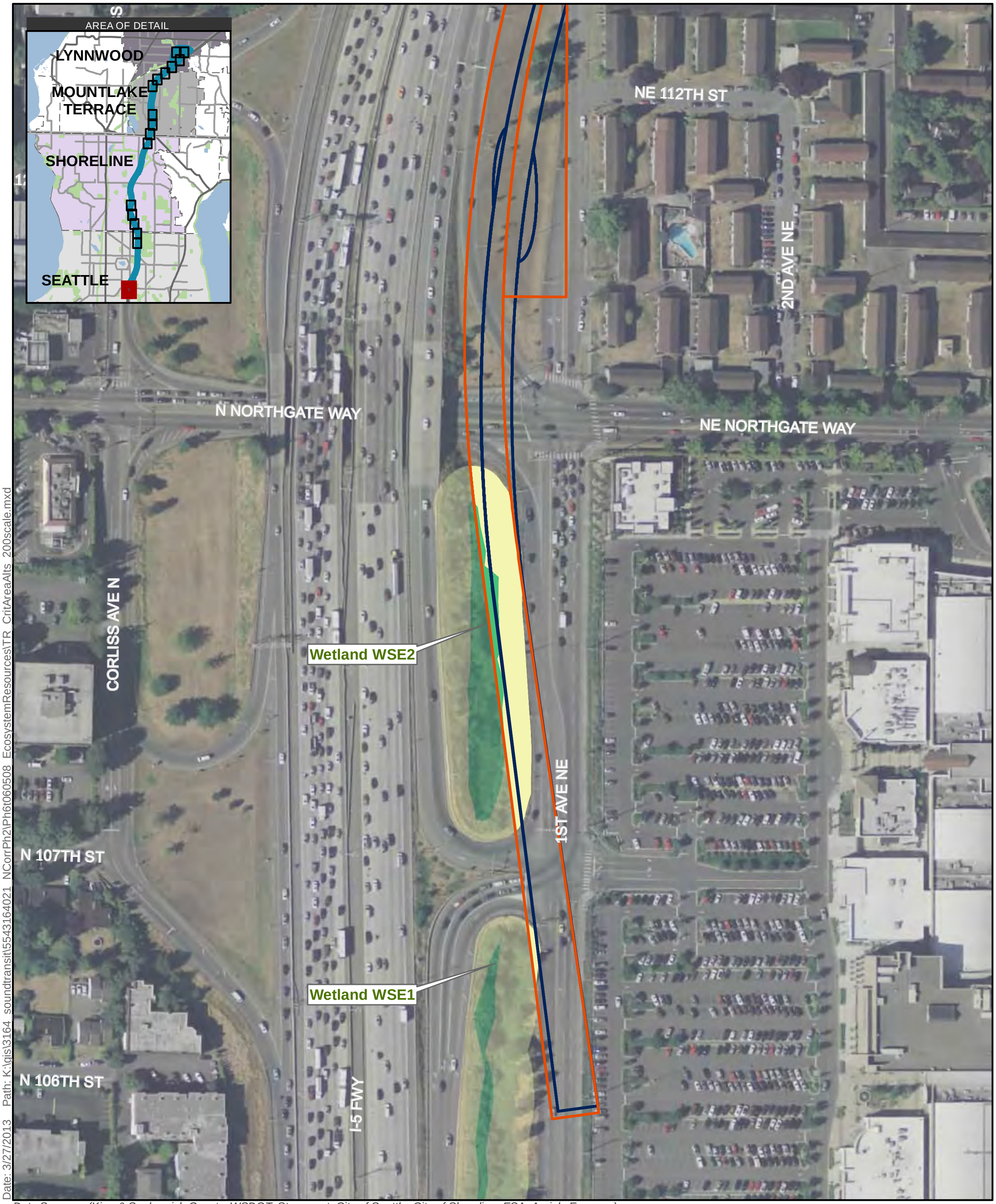
Study Area
Roadway
Local Street
Photo Location
Open Stream
Piped Stream
Waterbody
City Boundary
County Boundary
Park

Figure C-1
Stream Photo Locations

Lynnwood Link Extension

APPENDIX D

Wetland and Stream Impacts



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Data Sources: (King & Snohomish County, WSDOT, Streamnet, City of Seattle, City of Shoreline, ESA, Aerials Express.)

N

0 200
Feet

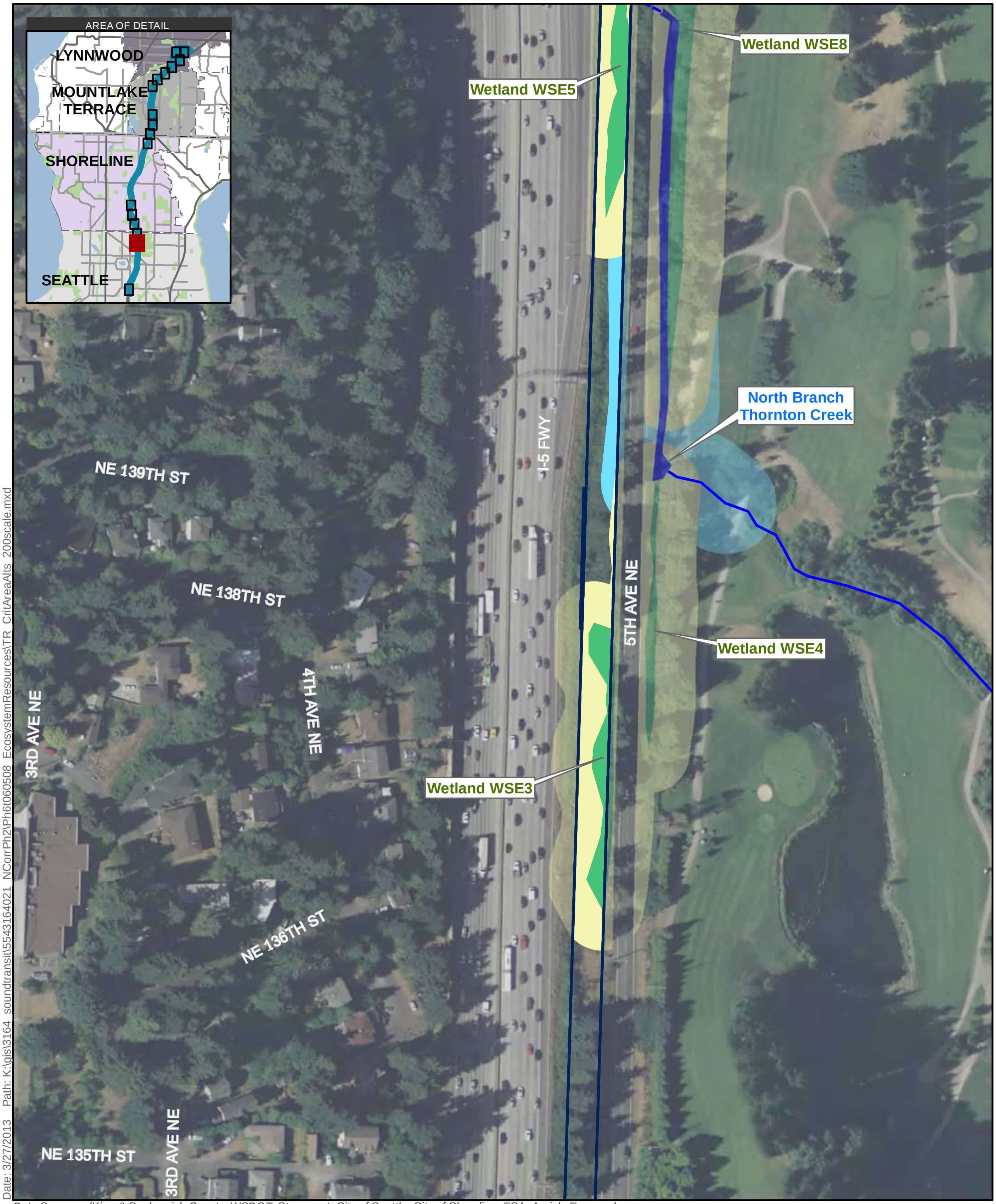
Stream
Stream Buffer
Wetland
Wetland Buffer

Piped Stream
Open Stream

Alternative
A1
A3, A5, A7, A10 + A11

Appendix D
Figure 1
Wetland and Stream Impacts

Lynnwood Link Extension



Date: 3/27/2013 Path: K:\gis\3164 soundtransit\5543164021 NCorrPh2\Ph6t060508 EcosystemResources\TR CritAreaAlts 200scale.mxd

Data Sources: (King & Snohomish County, WSDOT, Streamnet, City of Seattle, City of Shoreline, ESA, Aerials Express.)

N

0 200

Feet

Stream
Stream Buffer
Wetland
Wetland Buffer

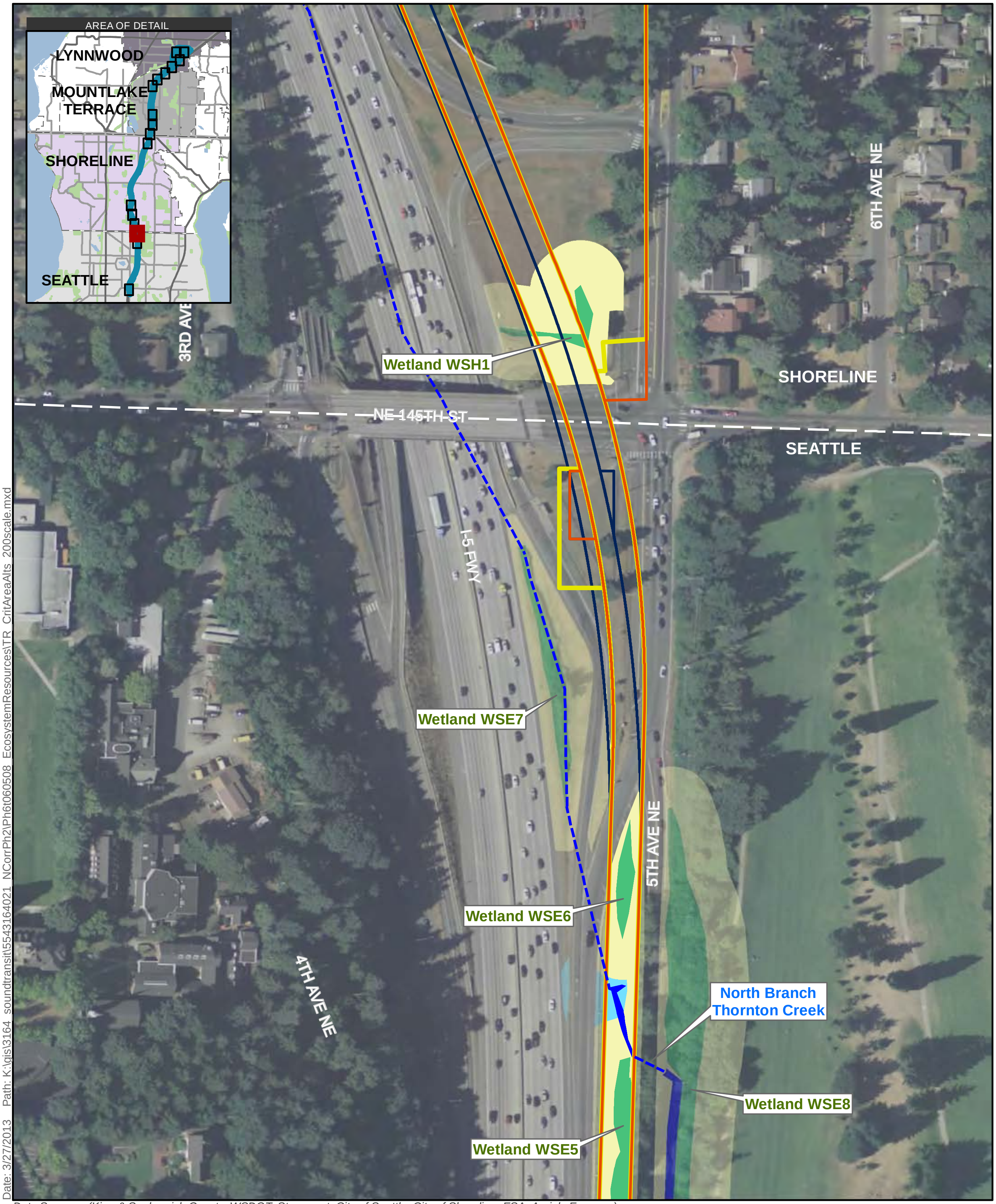
Piped Stream
Open Stream

Alternative

A1, A3, A5, A7, A10 + A11

Appendix D
Figure 2
Wetland and Stream Impacts

Lynnwood Link Extension



Data Sources: (King & Snohomish County, WSDOT, Streamnet, City of Seattle, City of Shoreline, ESA, Aerials Express.)

N

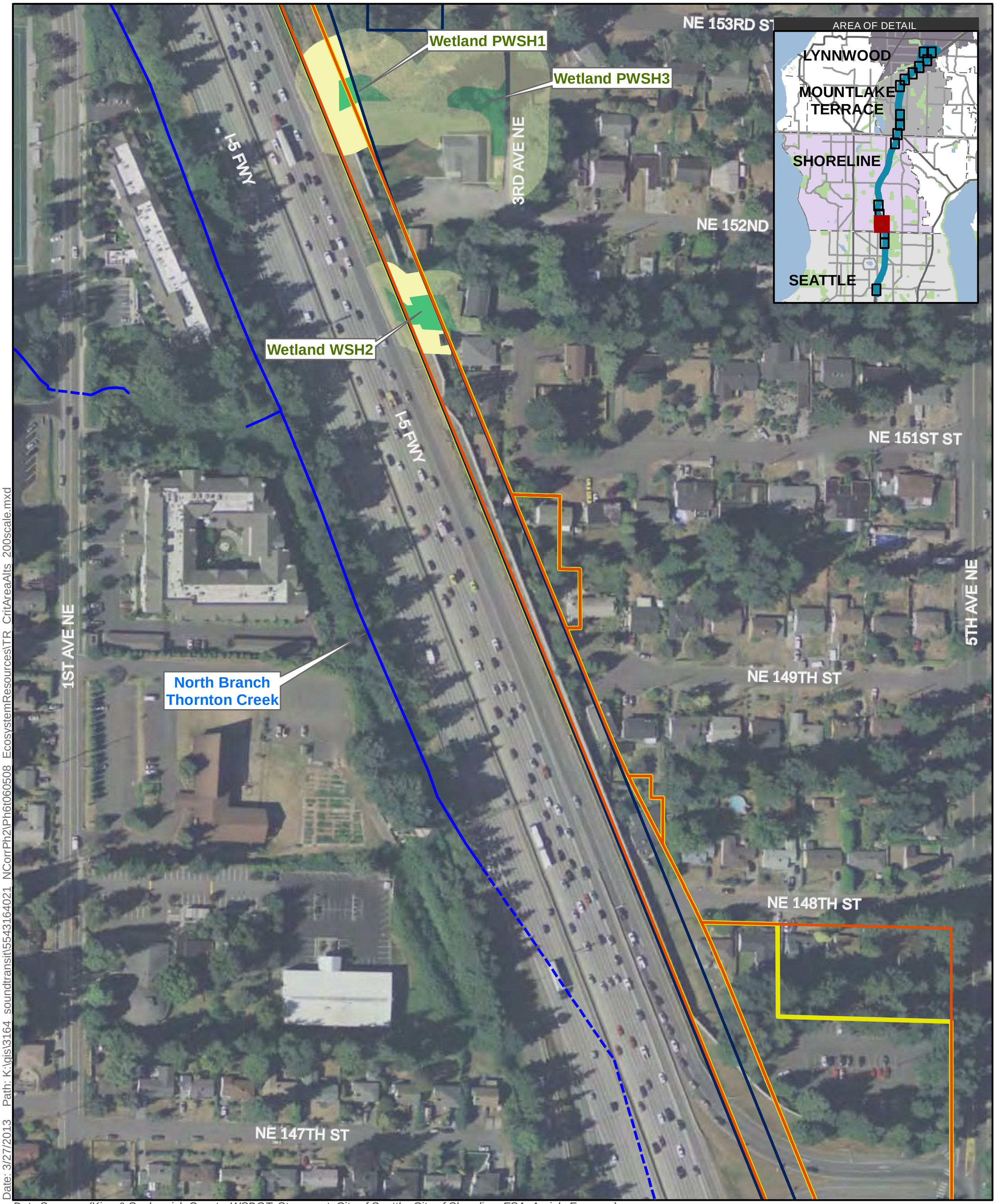
0 200
Feet

Stream
Stream Buffer
Wetland
Wetland Buffer
Piped Stream
Open Stream

Alternative
A1 + A10
A3 + A11
A5 + A7

Appendix D
Figure 3
Wetland and Stream Impacts

Lynnwood Link Extension



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Data Sources: (King & Snohomish County, WSDOT, Streamnet, City of Seattle, City of Shoreline, ESA, Aerials Express.)

N

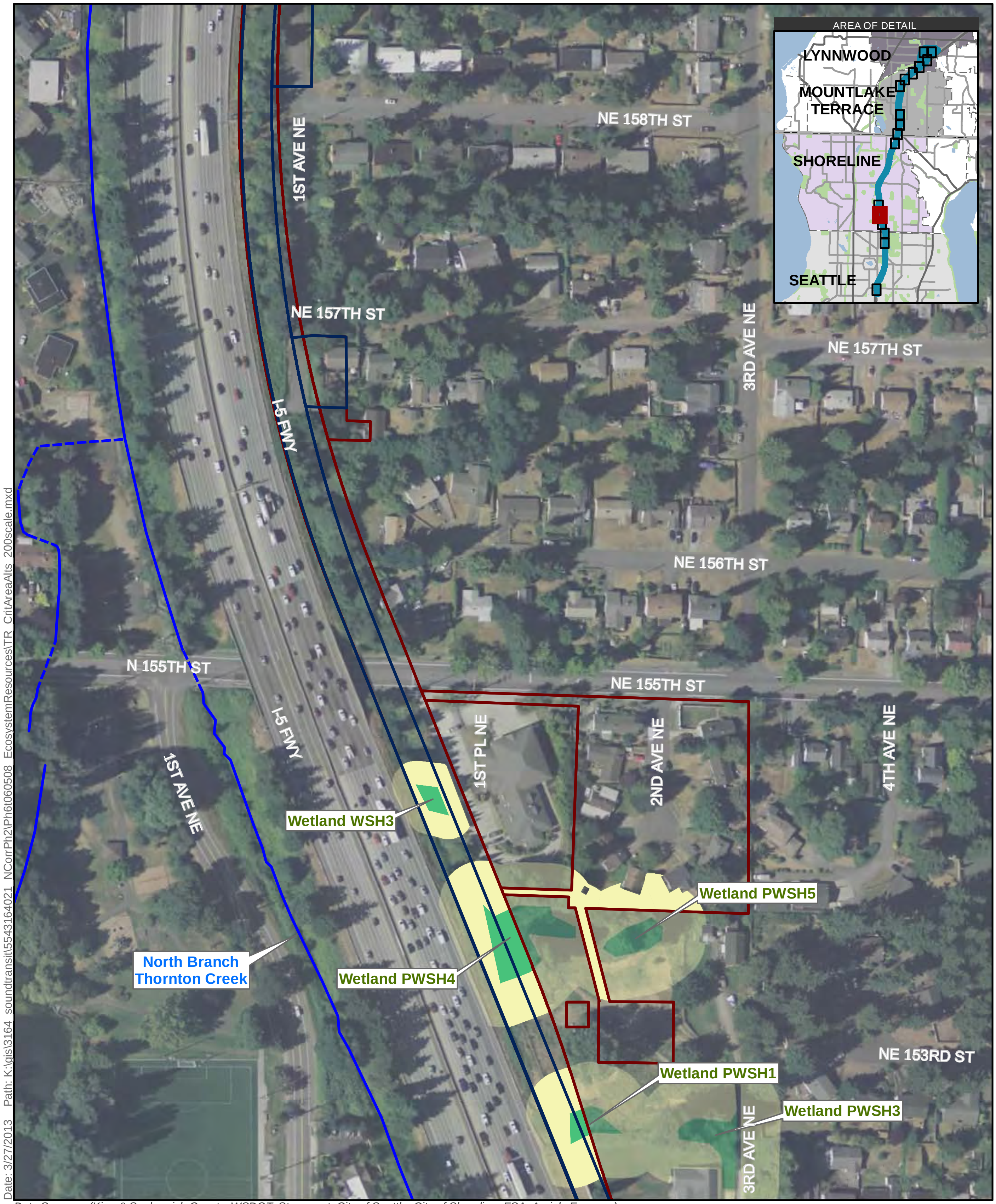
0 200
Feet

Stream
Stream Buffer
Wetland
Wetland Buffer
Piped Stream
Open Stream

Alternative
A1 + A10
A3 + A11
A5 + A7

Appendix D
Figure 4
Wetland and Stream Impacts

Lynnwood Link Extension



Data Sources: (King & Snohomish County, WSDOT, Streamnet, City of Seattle, City of Shoreline, ESA, Aerials Express.)

N

0 200
Feet

Stream
Stream Buffer
Wetland
Wetland Buffer

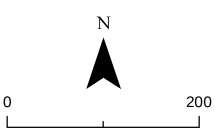
Piped Stream
Open Stream

Alternative
A1, A3, A10 + A11
A5 + A7

Appendix D
Figure 5
Wetland and Stream Impacts

Lynnwood Link Extension

Data Sources: (King & Snohomish County, WSDOT, Streamnet, City of Seattle, City of Shoreline, ESA, Aerials Express.)

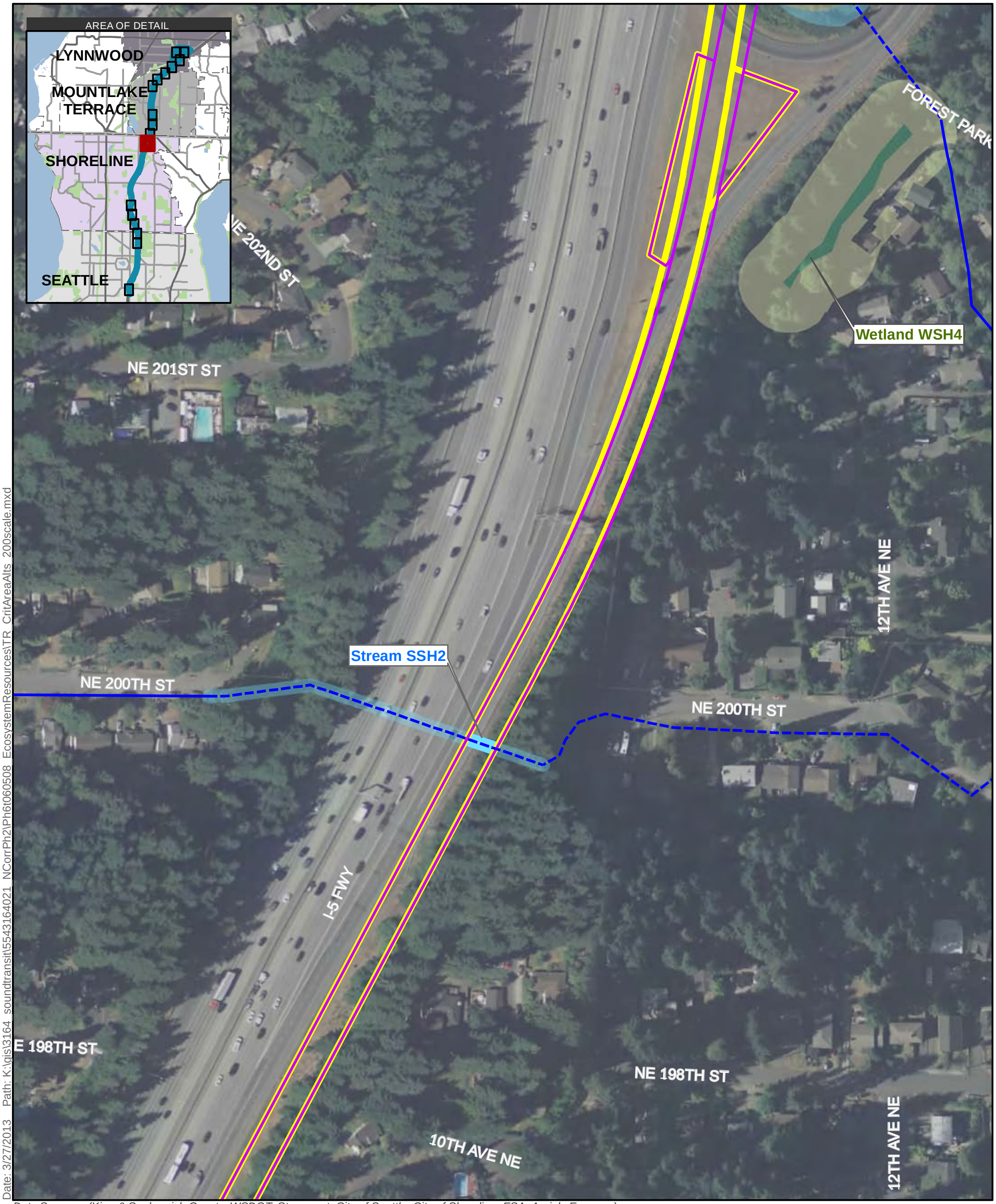


Stream
Stream Buffer
Wetland
Wetland Buffer
Piped Stream
Open Stream

Alternative
A1, A3, A5, A7, A10 + A11

Appendix D
Figure 6
Wetland and Stream Impacts

Lynnwood Link Extension



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Data Sources: (King & Snohomish County, WSDOT, Streamnet, City of Seattle, City of Shoreline, ESA, Aerials Express.)

N

0 200
Feet

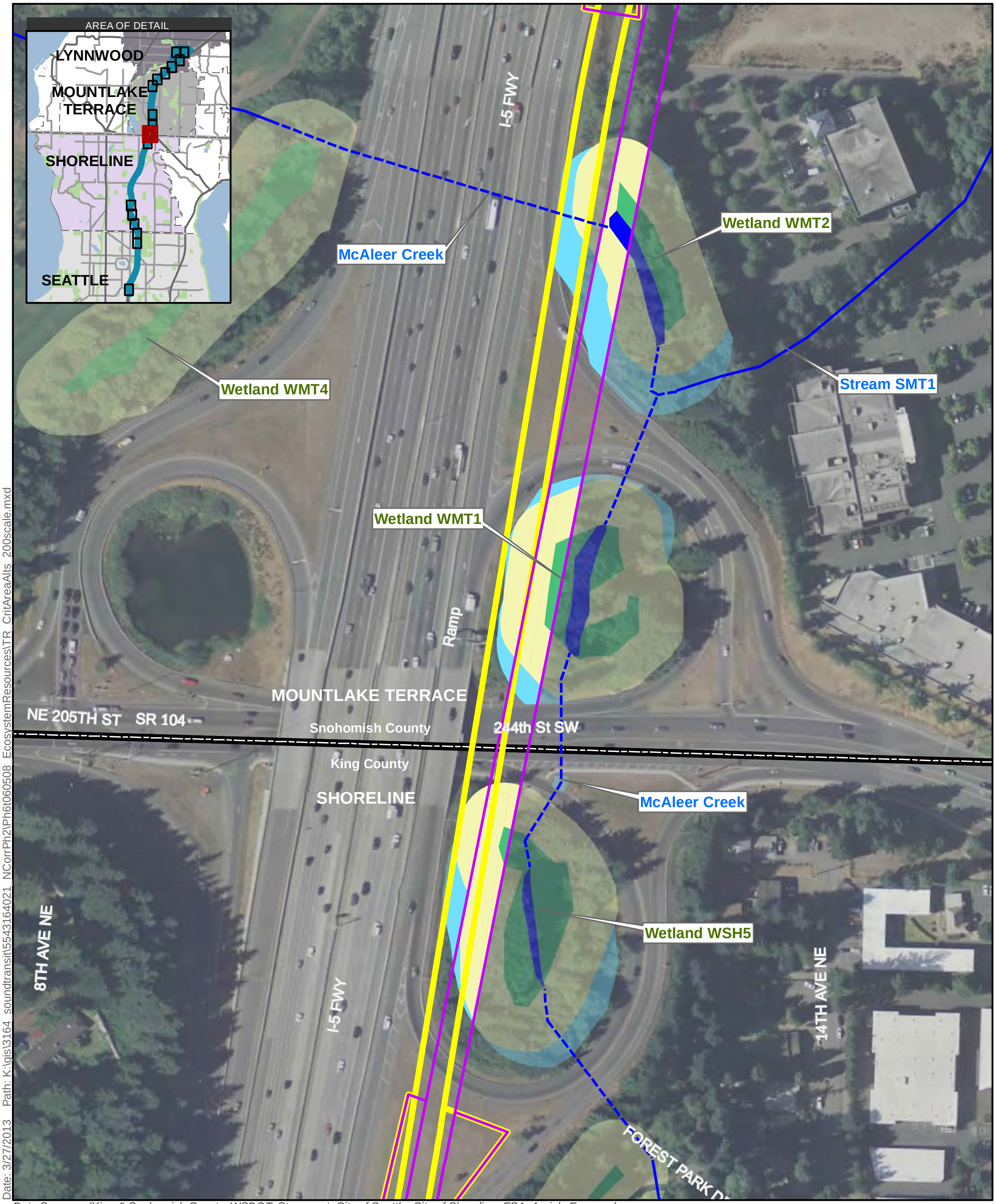
Stream
Stream Buffer
Wetland
Wetland Buffer

Piped Stream
Open Stream

Alternative
B1, B2 + B2A
B4

Appendix D
Figure 7
Wetland and Stream Impacts

Lynnwood Link Extension



Data Sources: (King & Snohomish County, WSDOT, Streamnet, City of Seattle, City of Shoreline, ESA, Aerials Express.)

N

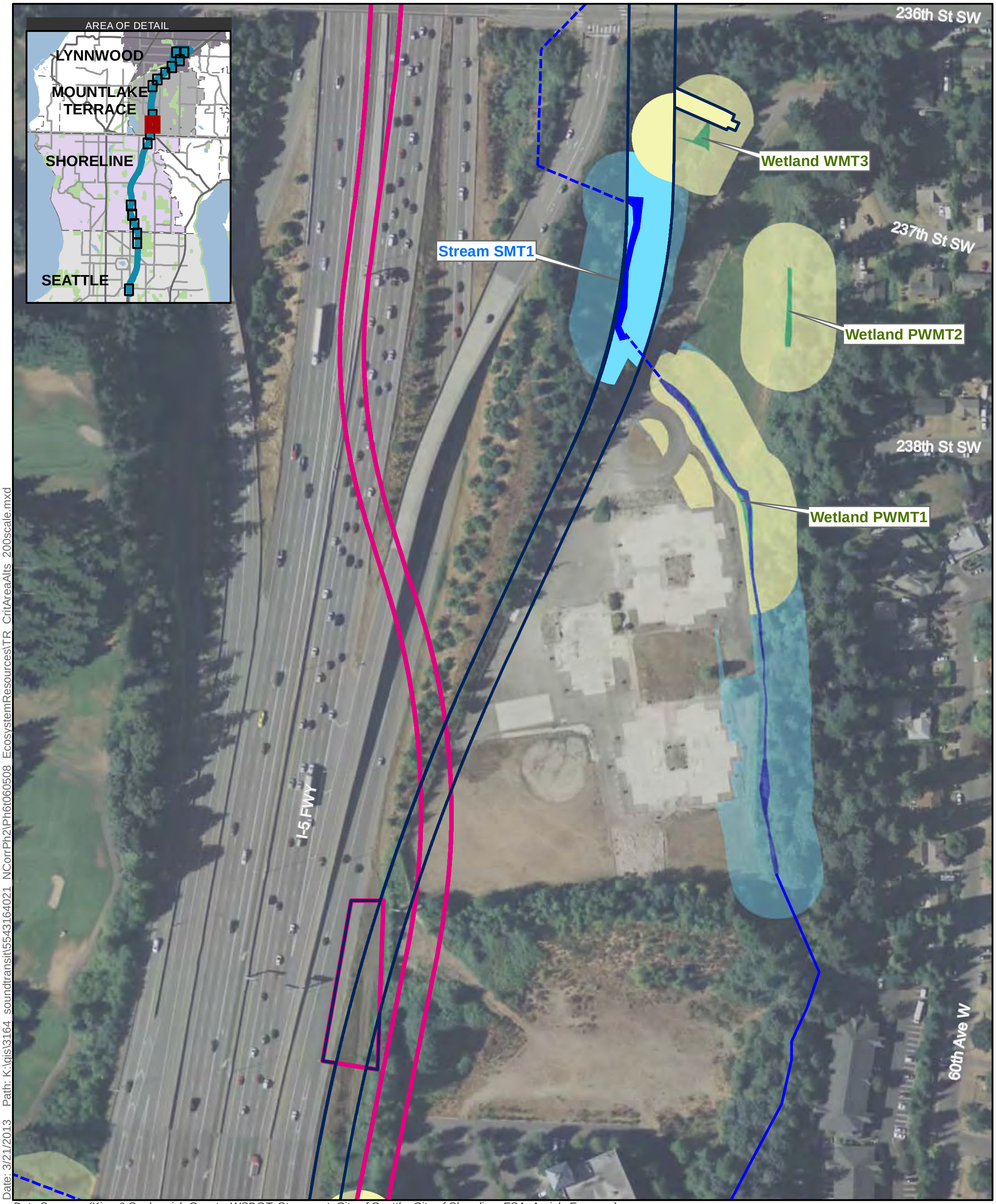
0 200 Feet

Stream
Stream Buffer
Wetland
Wetland Buffer
Piped Stream
Open Stream

Alternative
B1, B2 + B2A
B4

Appendix D
Figure 8
Wetland and Stream Impacts

Lynnwood Link Extension



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Data Sources: (King & Snohomish County, WSDOT, Streamnet, City of Seattle, City of Shoreline, ESA, Aerials Express.)

N

0 200
Feet

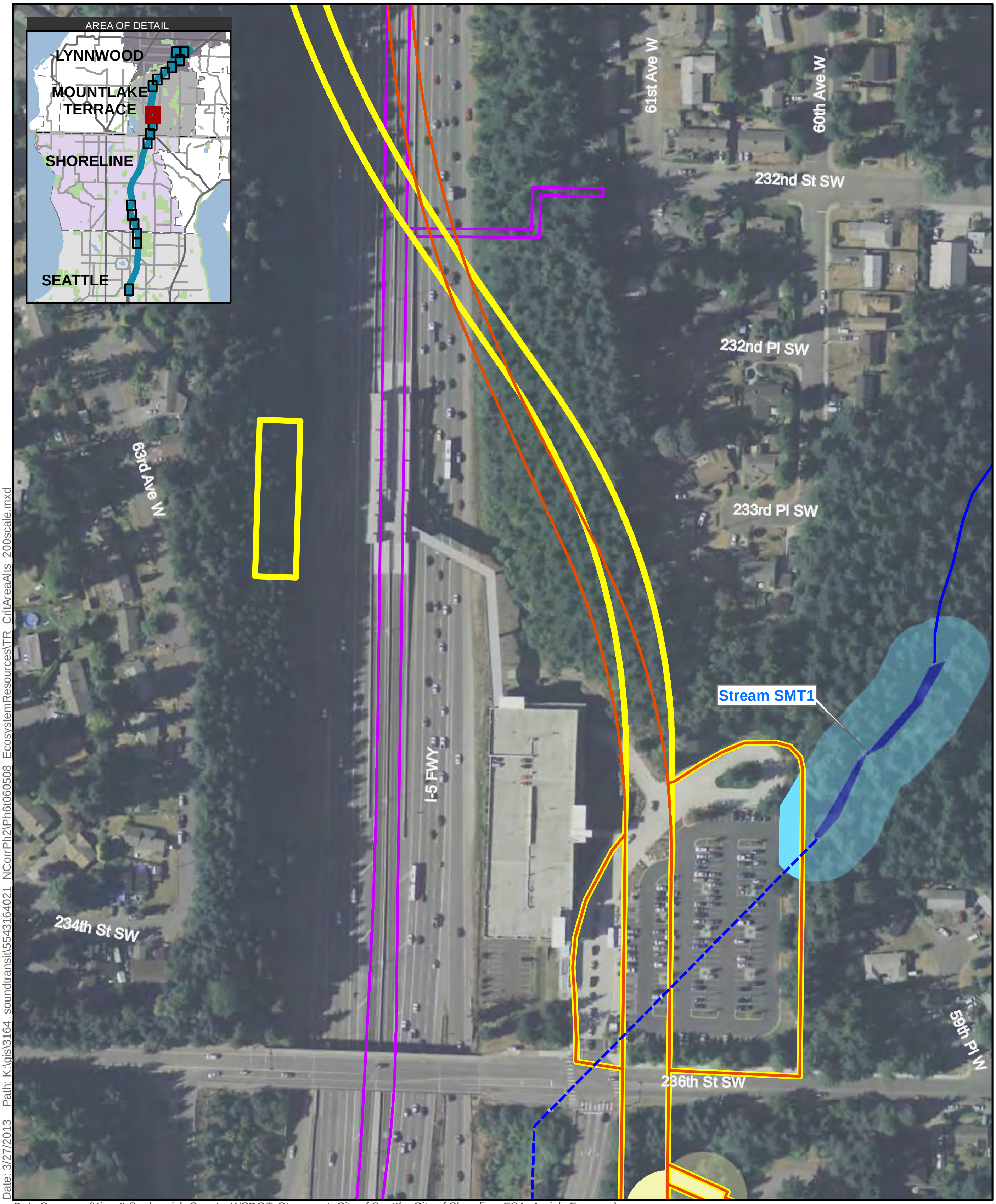
Stream
Stream Buffer
Wetland
Wetland Buffer

Piped Stream
Open Stream

Alternative
B1, B2 + B2A
B4

Appendix D
Figure 9
Wetland and Stream Impacts

Lynnwood Link Extension



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Data Sources: (King & Snohomish County, WSDOT, Streamnet, City of Seattle, City of Shoreline, ESA, Aerials Express.)

N

0 200

Feet

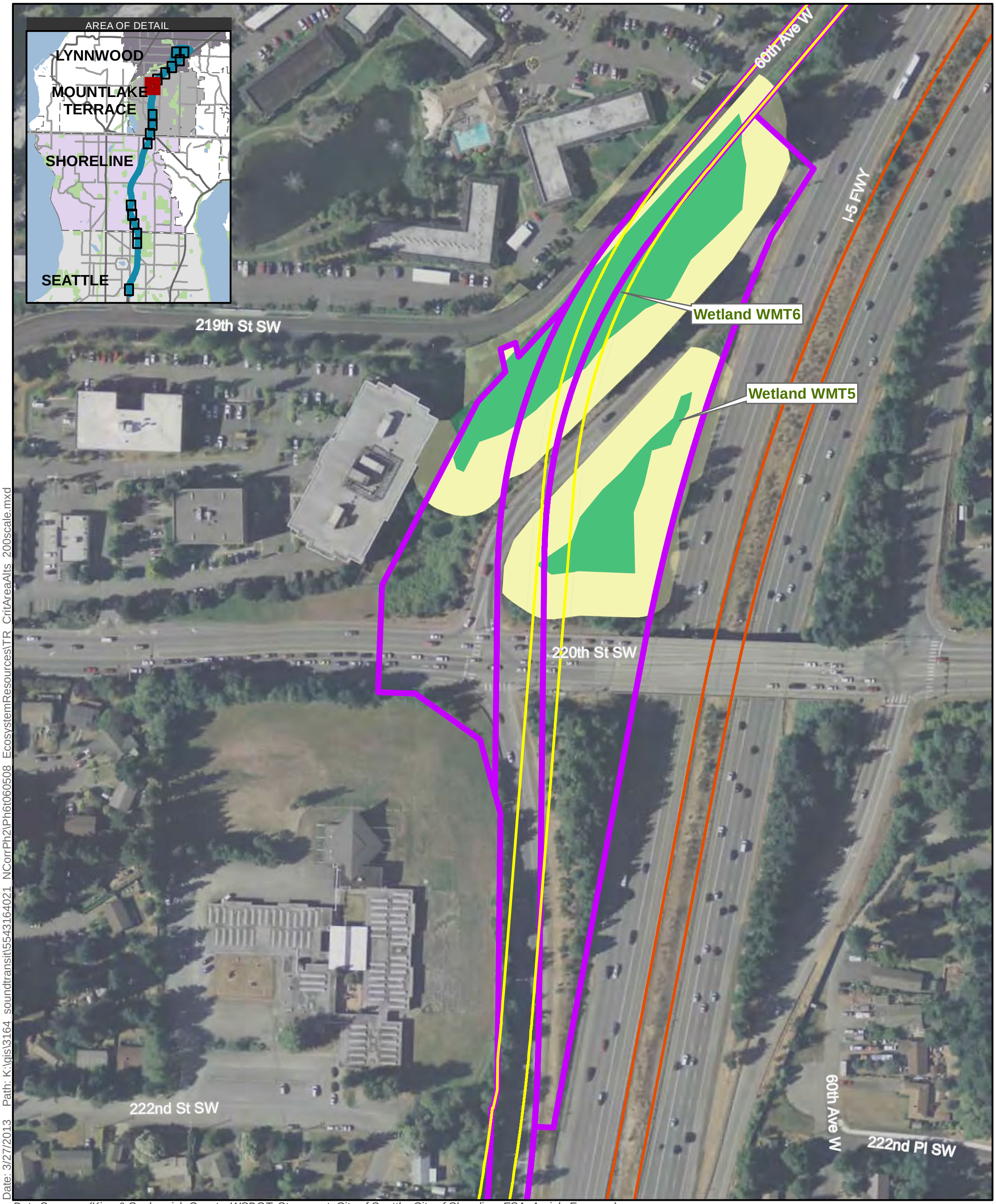
Stream
Stream Buffer
Wetland
Wetland Buffer

Piped Stream
Open Stream

Alternative
B1
B2 + B2A
B4

Appendix D
Figure 10
Wetland and Stream Impacts

Lynnwood Link Extension



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Data Sources: (King & Snohomish County, WSDOT, Streamnet, City of Seattle, City of Shoreline, ESA, Aerials Express.)

N

0 200

Feet

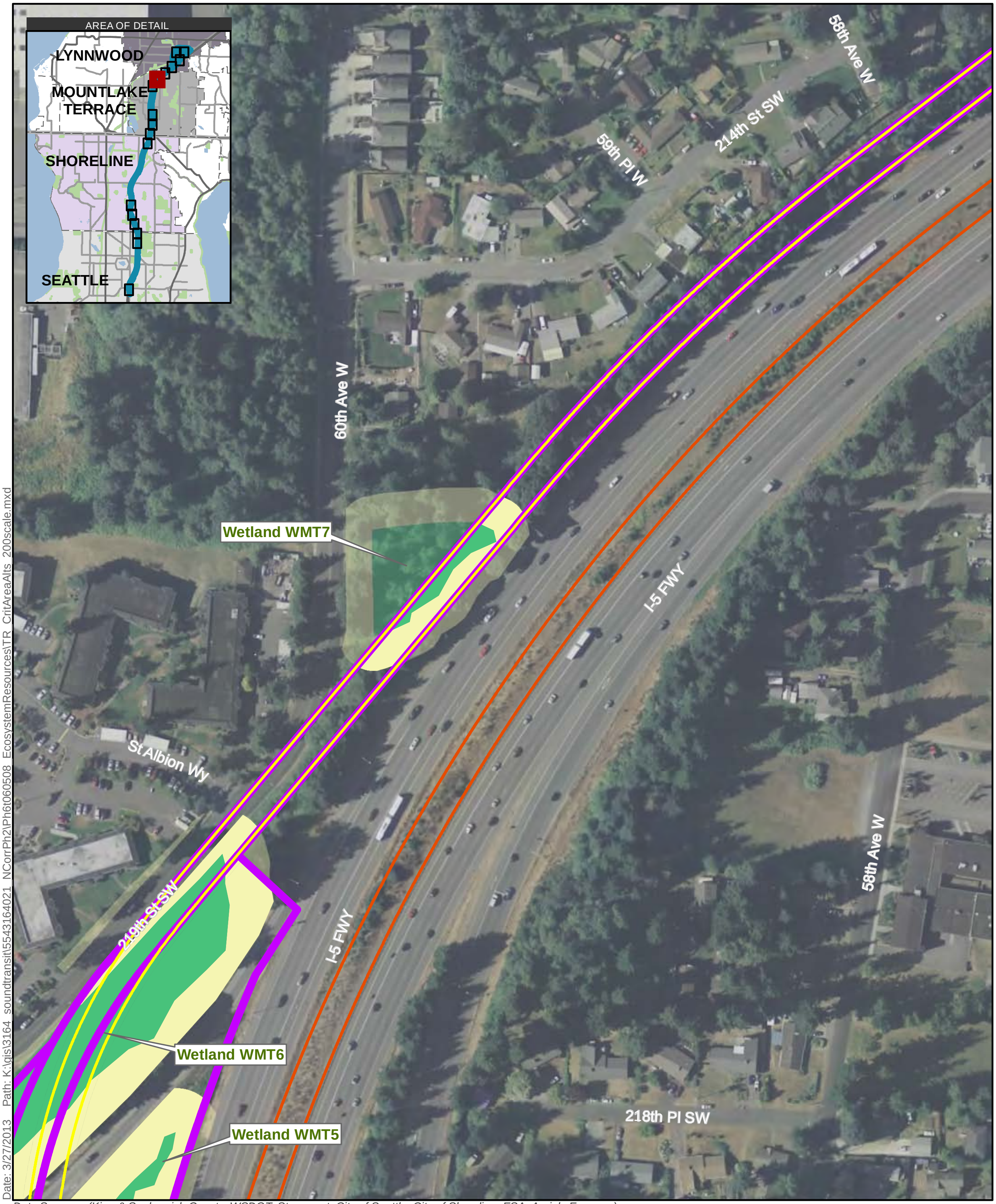
Stream
Stream Buffer
Wetland
Wetland Buffer

Piped Stream
Open Stream

Alternative
B1 + B4
B2
B2A

Appendix D
Figure 11
Wetland and Stream Impacts

Lynnwood Link Extension



Data Sources: (King & Snohomish County, WSDOT, Streamnet, City of Seattle, City of Shoreline, ESA, Aerials Express.)

N

0 200

Feet

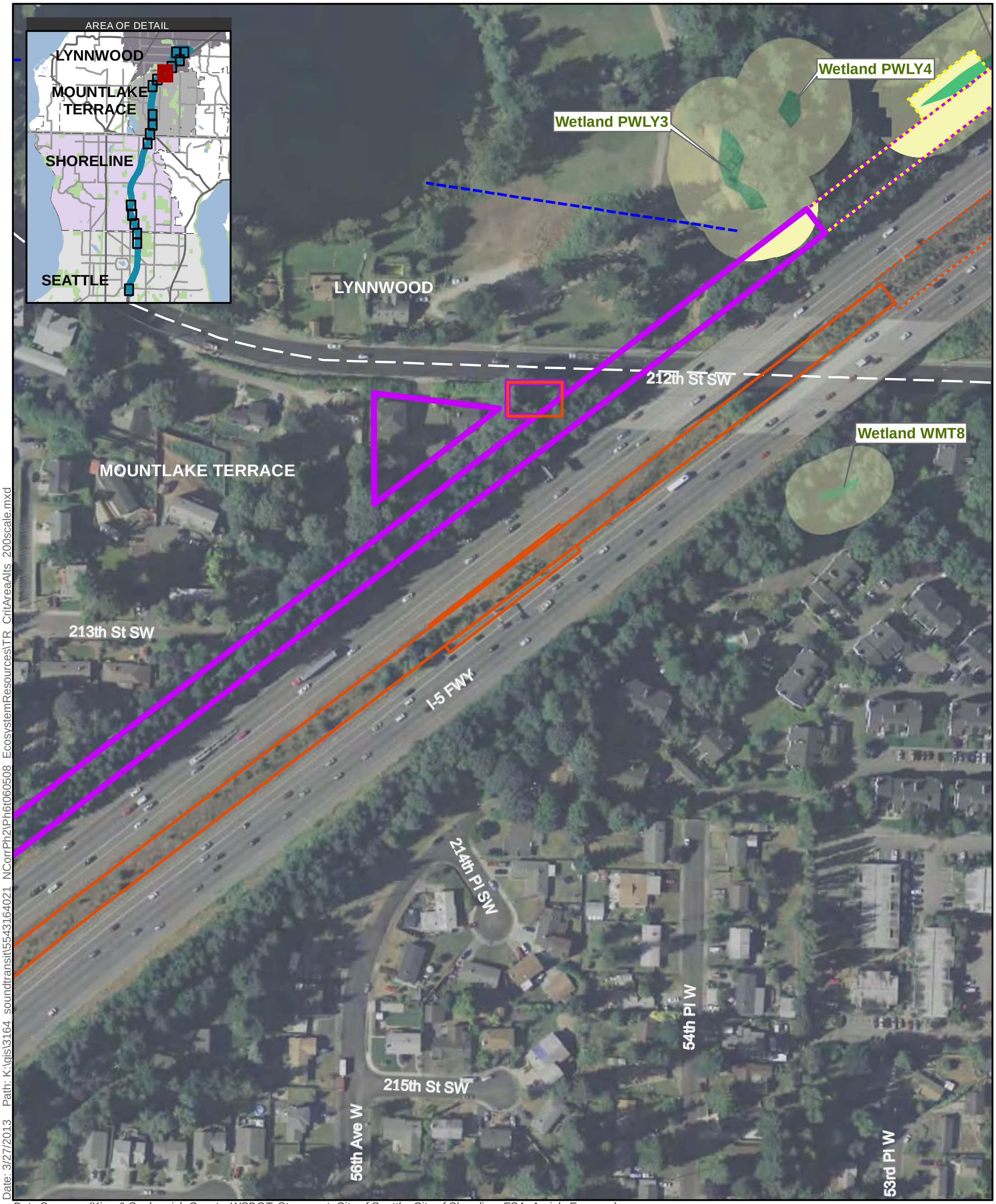
Stream
Stream Buffer
Wetland
Wetland Buffer

Piped Stream
Open Stream

Alternative
B1 + B4
B2
B2A

Appendix D
Figure 12
Wetland and Stream Impacts

Lynnwood Link Extension



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Data Sources: (King & Snohomish County, WSDOT, Streamnet, City of Seattle, City of Shoreline, ESA, Aerials Express.)

N

0 200
Feet

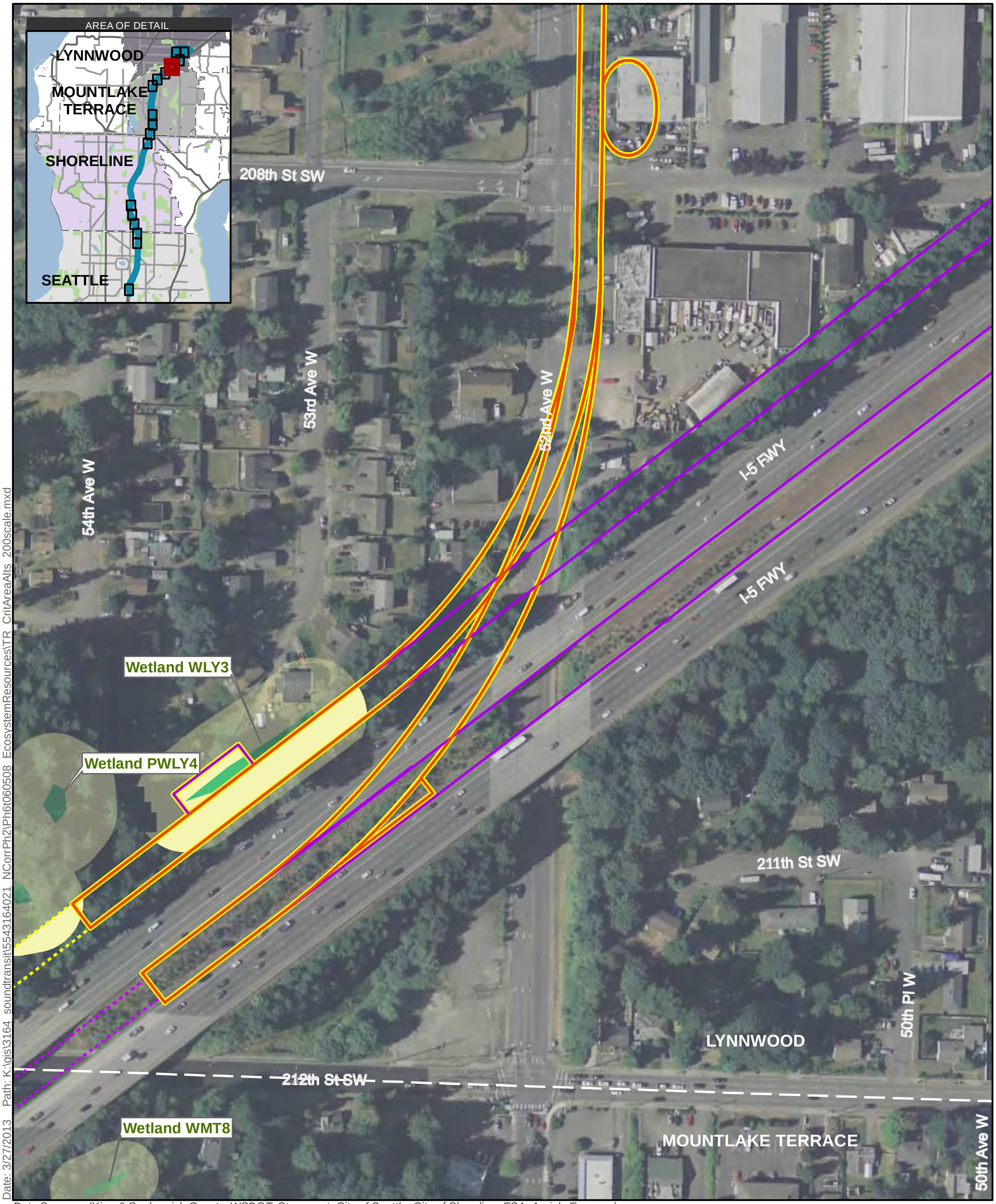
Stream
Stream Buffer
Wetland
Wetland Buffer

Piped Stream
Open Stream

Alternative
B1 + B4
B2 + B2A
C1W
C2W + C3W
C1M, C2M + C3M

Appendix D
Figure 13
Wetland and Stream Impacts

Lynnwood Link Extension



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Data Sources: (King & Snohomish County, WSDOT, Streamnet, City of Seattle, City of Shoreline, ESA, Aerials Express.)

N

0 200
Feet

Stream
Stream Buffer
Wetland
Wetland Buffer

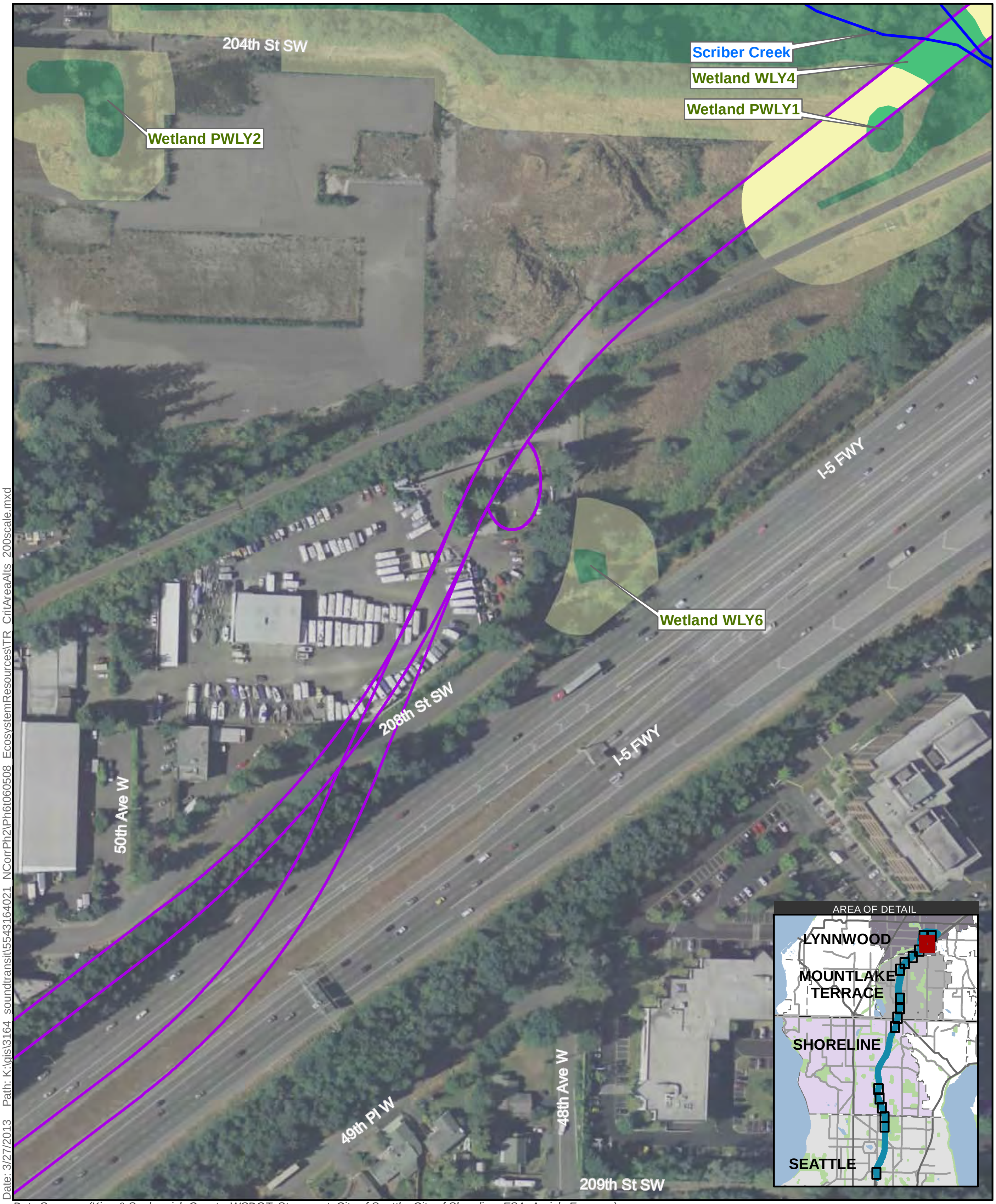
Piped Stream
Open Stream

Alternative
C1W + C1M
C2W + C2M
C3W + C3M

B1 + B4
B2 + B2A

Appendix D
Figure 14
Wetland and Stream Impacts

Lynnwood Link Extension



Date: 3/27/2013 Path: K:\gis\3164 soundtransit\5543164021 NCorrPh2\Ph6t060508 EcosystemResources\TR CritAreaAlts 200scale.mxd

Data Sources: (King & Snohomish County, WSDOT, Streamnet, City of Seattle, City of Shoreline, ESA, Aerials Express.)

N

0 200
Feet

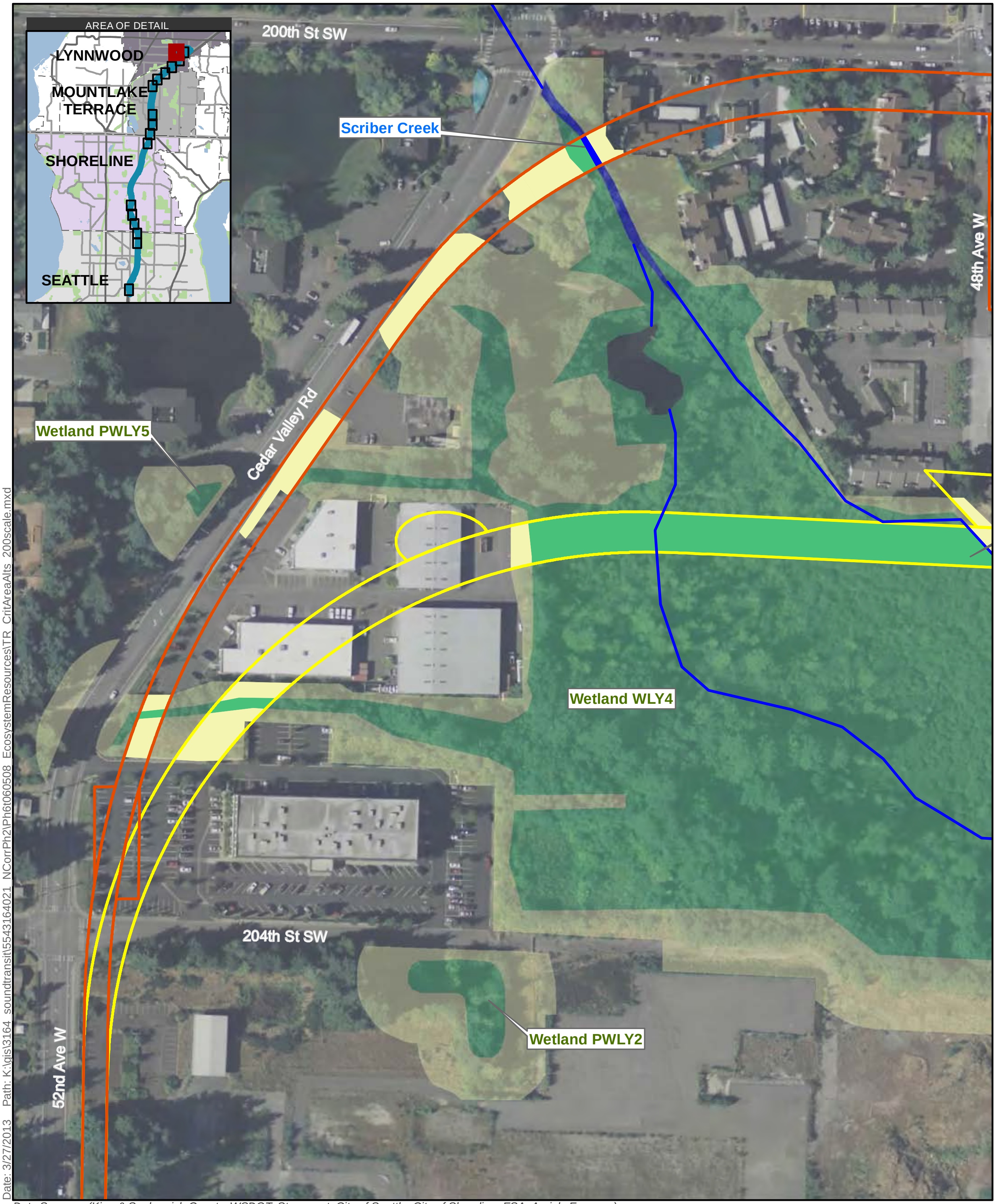
Stream
Stream Buffer
Wetland
Wetland Buffer

Piped Stream
Open Stream

Alternative
C3W + C3M

Appendix D
Figure 15
Wetland and Stream Impacts

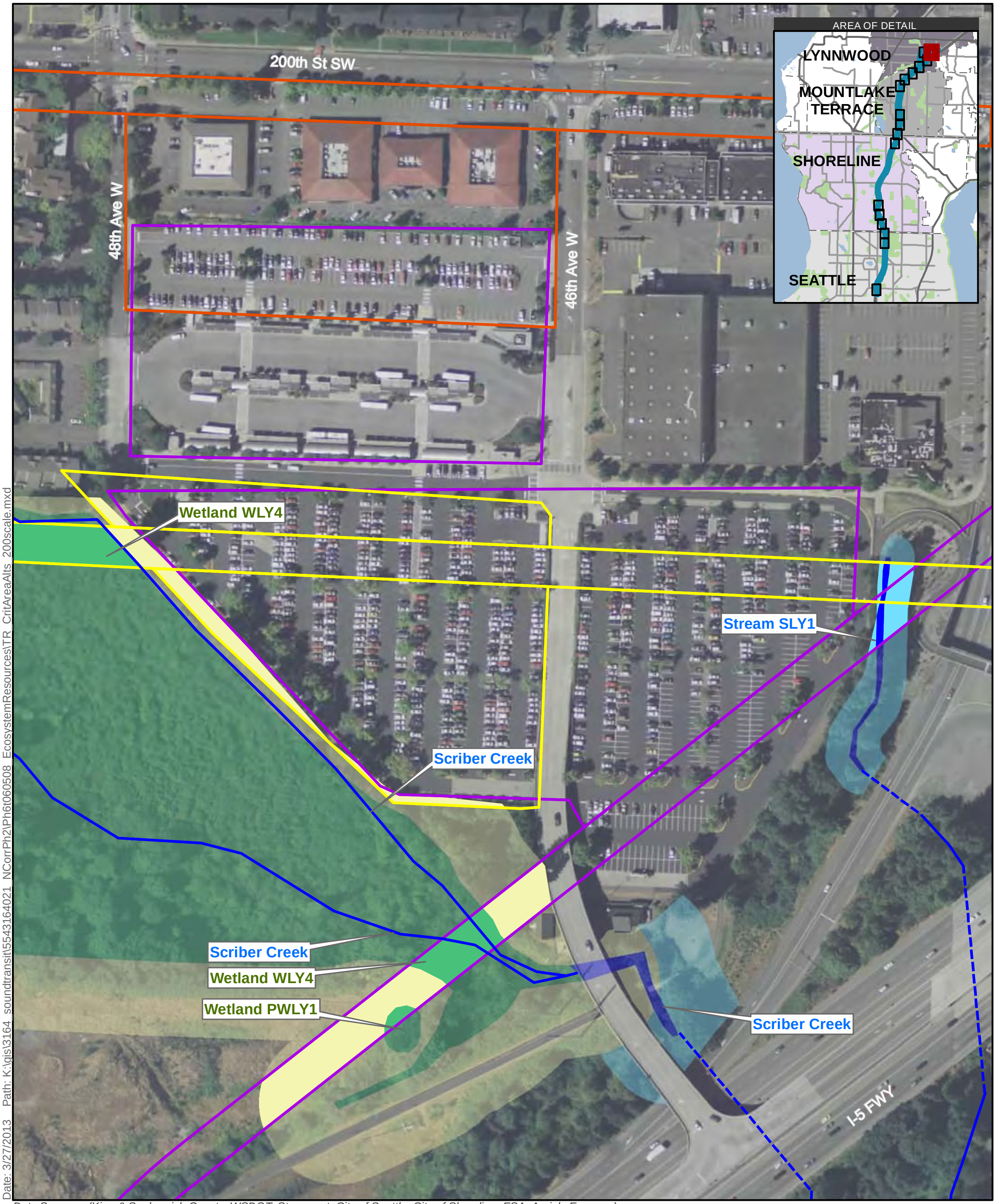
Lynnwood Link Extension



Data Sources: (King & Snohomish County, WSDOT, Streamnet, City of Seattle, City of Shoreline, ESA, Aerials Express.)

Appendix D
Figure 16
Wetland and Stream Impacts

Lynnwood Link Extension



Date: 3/27/2013 Path: K:\gis\3164 soundtransit\5543164021 NCorrPh2\Ph6t060508 EcosystemResources\TR CritAreaAlts 200scale.mxd

Data Sources: (King & Snohomish County, WSDOT, Streamnet, City of Seattle, City of Shoreline, ESA, Aerials Express.)

N

0 200
Feet

Stream
Stream Buffer
Wetland
Wetland Buffer

Piped Stream
Open Stream

Alternative
C1W + C1M
C2W + C2M
C3W + C3M

Appendix D
Figure 17
Wetland and Stream Impacts

Lynnwood Link Extension