V Wetland Delineation Report

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WETLAND DELINEATION REPORT

SR 502 CORRIDOR WIDENING / I-5 TO BATTLEGROUND

Clark County, WA

Prepared by

Thomas D. Kohl, Wetland Biologist
Southwest Region Office, Vancouver WA

Paul Dreisbach, Wetland Biologist
Environmental Services Office, Olympia WA

Tuesday Serra Shean, Wetland Biologist
Environmental Services Office, Olympia WA

Washington State
Department of Transportation

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SUMMARY

The intention of the proposed project is to widen State Route (SR) 502 from two to four lanes between Duluth and Battle Ground in Clark County, Washington from Milepost (MP) 2.55 to MP 6.53. The two additional lanes will accommodate increasing traffic volumes, and improve safety on SR 502. This report identifies the locations of wetlands that may be impacted during roadway improvement activities. The legal description of the project location is from west to east, and falls within Sections 34, 35, & 36 of Township 4 North, Range 1 East; Section 1, 2, & 3 of Township 3 North, Range 1 East; Sections 31, 32, & 33 of Township 4 North, Range 2 East; and Section 4, 5, & 6 of Township 3 North, Range 2 East. Figure 1 is a map showing the project vicinity (Appendix A).

Washington State Department of Transportation (WSDOT) biologists delineated 74 wetlands within the proposed project area. Some of the wetlands are hydrologically connected and were rated as one wetland. Many of the wetlands extend beyond the project boundaries and are components of larger wetland complexes. Spatially, the wetlands are distributed relatively equally on both sides of SR 502, although the north side contains 2 Category I wetlands, 9 Category II wetlands, 13 Category III wetlands, and 9 Category IV wetlands, while the south side of SR 502 contains 1 Category I wetland, 2 Category II wetlands, 15 Category III wetlands, and 23 Category IV wetlands according to the *Washington State Wetland Rating System for Western Washington* (Hruby 2004). Below is a summary of the wetlands delineated by WSDOT.

Table1. Wetland Summaries

Wetland	Cowardin Class	HGM Class	ECY Rating	Clark Co. Rating	Datapoints (Appendix D)	Survey/ App. B (Page)	Summary (page)
NA	PEM	RIV	II	II	NA-DU1, NA-DW1	1	9
NB	PFO	DEP	III	III	NB-DU1, NB-DW1	1	10
NC	PSS	DEP	IV	IV	NC-DW1	1	11
ND & NE	PEM, PFO	RIV	II	II	ND-DU1, ND-DW1, NE-DW1	1 & 2	12
NF & SI	PEM, PFO	DEP	III	II	NF-DU1, NF-DW1, SI-DU1, SI-DW1	2, 3 & 4	13
NG & NH	PFO	DEP	II	I	NG-DU1, NG-DW1, NH-DW1	2	14
NGG	PEM	DEP	IV	IV	NGG-DW1	2	15
NI & NJ	PEM, PFO	DEP	III	III	NI-DW1, NJ-DW1, NJ-DW2	4	16
NK	PEM, PFO	DEP	III	II	NK-DW1, NK-DW2	5	17
NL	PEM	DEP	III	III	NL-DW1	6	18
NN & SU	PEM	RIV	I	I	NN-DW1, SU-DU1, SU-DW1	8 & 9	19
NO	PEM	DEP	IV	IV	NO-DW1	10	20
NQ	PEM	DEP	IV	IV	NQ-DW1	12	21
NR	PSS	DEP	I	I	NR-DU1, NR-DU2, NR-DW1	12 & 13	22

Table 1. Wetland Summaries (cont.)

Wetland	Cowardin Class	HGM Class	ECY Rating	Clark Co. Rating	Datapoints	Survey/ App. B (Page)	Summary (page)
NS	PEM, PSS	DEP	II	II	NS-DW1	13	23
NT	PEM, PFO	DEP	II	II	NT-DU1, NT-DW1, NT-DW2	13	24
NU	PEM	DEP	III	III	NU-DU1, NU-DW1	13	25
NX	PEM, PFO	DEP	II	II	NX-DU1, NX-DU2, NX-DW1, NX-DW2	14	26
NY	PEM, PFO	DEP	III	III	NY-DW1	14	27
NZ	PEM	DEP	IV	IV	NZ-DW1	14	28
NAA	PFO	DEP	II	I	NAA-DWI, NAA-DW2	14	29
NAB	PEM,PFO	DEP	IV	IV	NAB-DW1	14 & 15	30
NAC	PFO	DEP	III	III	NAC-DU1, NAC-DW1	15	31
NAD	PFO	DEP	IV	III	NAD-DW1	15	32
NAE	PFO	DEP	III	III	NAE-DW1	15	33
NAF	PFO	DEP	III	III	NAF-DW1	15	34
NAG	PEM	DEP	III	III	NAG-DW1, NAG-DW2	15	35
SA	PEM,PFO	DEP	II	II	SA-DW1 & SA-DU1	1	36
SB	PEM, PFO	DEP	III	III	SB-DW1	1	37
SC	PEM	DEP	IV	IV	SC-DW1, SC-DU1	1	38
SD	PEM	DEP	IV	IV	SD-DW1	1	39
SE & SF	PEM, PFO	DEP	III	III	SE-DW1, SF-DW1	2 & 3	40
SJ	PEM	DEP	IV	IV	SJ-DW1	4	41
SKK	PEM	DEP	IV	IV	SKK-DW1	4	42
SL					SL-DW1		
SLL					SLL-DW1		
SN	PEM	DEP	III	III	SN-DU1, SN-DW1, SN-DW2	4 & 5	43
SO	PFO	DEP	III	III	SO-DW1	5	44
SP	PEM	DEP	III	IV	SP-DW1	5	45
SQ	PEM	DEP	IV	IV	SQ-DW1	5	46
SR	PEM	DEP	IV	IV	SR-DU1, SR-DW1	7	47

Table 1. Wetland Summaries (cont.)

Wetland	Cowardin Class	HGM Class	ECY Rating	Clark Co. Rating	Datapoints	Survey/ App. B (Page)	Summary (page)
ST	PEM	DEP	IV	IV	ST-DU1, ST-DU2, ST-DW1, ST-DW2	7	48
SV	PFO	DEP	III	III	SV-DW1	9	49
SVV	PEM	DEP	IV	III	SVV-DW1	11	50
SVW	PEM	DEP	IV	III	SVW-DW1	11	51
SX	PEM,PSS	DEP	II	II	SX-DW1, SX-DW2	11	52
SY	PEM	RIV	III	III	SY-DW1	11	53
SZ	PEM	DEP	IV	IV	SZ-DW1	11	54
SAA	PEM	DEP	III	IV	SAA-DU1, SAA-DW1	11 & 12	55
SAB, NV, NW	PEM	RIV	IV	IV	SAB-DW1, NV-DW1, NW-DW1	13	56
SAD	PEM	DEP	III	IV	SAD-DU1, SAD-DU2, SAD-DW1, SAD-DW2	12	57
SAE	PEM	DEP	III	IV	SAE-DW1	12	58
SAF & SAG	PFO, PSS, PEM	DEP	III	III	SAF-DW1, SAG-DW1	12	59
SAH	PEM	DEP	IV	IV	SAH-DW1	12 & 13	60
SAI	PEM	DEP	IV	IV	SAI-DU1, SAI-DW1, SAI-DW2, SAI-DW3, SAI-DW4	14	61
SAJ	PEM	DEP	IV	IV	SAJ-DU1, SAJ-DW1	14	62
SAK	PEM	DEP	IV	IV	SAK-DW1	14 & 15	63
SAM	PEM	DEP	IV	IV	SAM-DU1, SAM-DW1	15	64
SAN	PEM	DEP	IV	IV	SAN-DW1	15	65
SAO	PEM	DEP	IV	IV	SAO-DU1, SAO-DW1	15	66
SAP	PEM	DEP	IV	IV	SAP-DW1	15	67
SWD1	PEM	DEP	IV	IV	SWD1-DW1	1	68
SWD2	PEM	DEP	IV	IV	SWD2-DW1	4	69

Table 1. Wetland Summaries (cont.)

Wetland	Cowardin Class	HGM Class	ECY Rating	Clark Co. Rating	Datapoints	Survey/ App. B (Page)	Summary (page)
SWD3	PEM	DEP	IV	IV	SWD3-DW1	4	70
SWD4	PEM	DEP	IV	IV	SWD4-DW1	14 & 15	71

Implementation of the following measures are recommended to minimize impacts to wetlands, vegetation, and streams:

- Avoid impacts to Category I wetlands NR, NN, and SU to the extent possible in order to preserve their valued water quality, hydrologic, and habitat functions.
- The overall avoidance and minimization of impacts to the higher category wetlands, Categories I and II, may be achieved by designing the alignment to focus on the alternate side of the roadway in locations were high category wetlands only occur on one side of the roadway, and by focusing the overall proposed alignment to the south side of SR 502.
- Use standard temporary erosion and sedimentation control techniques during construction.
- Minimize vegetation clearing. Retention of native vegetation in the right-of-way conserves wildlife habitat and provides buffers for sensitive areas. Unavoidable clearing should be mitigated by replanting appropriate native vegetation in disturbed areas. Such revegetation should be coordinated with WSDOT biologists and landscape architects.
- Locate bridge piers and/or retaining walls as far upslope as possible from wetland edges and stream channels.
- Replace highway ditches with flat-bottom ditches adjacent to the widened roadway.

INTRODUCTION

Purpose and Goals

This Wetland Delineation Report has been prepared to meet requirements for wetland assessment outlined in the WSDOT Environmental Procedures Manual (WSDOT 2004). It contains the descriptions of the project area's wetland resources, but does not include information pertaining to streams, wildlife species and their respective habitats. The report does provide minimal information about the possible presence and location of threatened, endangered, and sensitive (TES) species observed during field investigation, although the provided information is intended to serve only as a supplemental source of information for the Biological Assessment (BA) process. Information on improvement-related impacts will be included at a later time. If needed, conceptual mitigation plans for the project will also be provided at a later time.

Project Description

Project Purpose

SR 502 is the National Highway System link between I-5 and northeast Clark County, and is an important commute, freight, and transit route for regional trips. As growth has increased, congestion and accidents have increased in the SR 502 corridor, and portions of SR 502 are either currently deficient or projected to be deficient within ten years. If SR 502 is not expanded to accommodate regional growth, congestion and other impacts will substantially reduce the transportation capability of this critical corridor to support the economy.

This project will help keep traffic moving on SR 502 between I-5 and Battle Ground as the area

continues to grow. Improved mobility and decreased congestion contribute to safer roads, appropriate travel speeds and reduced accident rates by controlling access onto and off of the highway.

Proposed Project Description

The SR 502 widening project begins at Duluth, WA then runs east on SR 502 through the intersections at NE 29th Ave., NE 50th Ave., and NE 72nd Ave. and continues east to the city limits of the City of Battle Ground. The widening project consists of increasing the current travel lanes from two to four, along with installing left and right hand turn lanes at NE 29th Ave., NE 50th Ave., and NE 72nd Ave.. The design includes: 4-12' travel lanes with 8' shoulders and a centerline pre-cast concrete barrier. The pre-cast concrete barrier is to be placed running the entire length of the project with permanent impact attenuators at each intersection and at appropriate barrier ends. Improvements will also be made to the illumination and traffic signals at each of the intersections to meet WSDOT design guidelines. The design will require the acquisition of right-of-way throughout the entire length of the project. The designed roadway width is 72' across while the existing roadway width varies from 32' to 42'. At the intersections of NE 29th Ave., NE 50th Ave., and NE 72nd Ave. the designed roadway width increases to 96'. The roadway section design is similar to improvements made during the summer of 2003 to a portion of SR 502 by the City of Battle Ground and follows AASHTO recommendations. Figure 1 in Appendix A is a vicinity map of the project area.

METHODS

This section describes the methodology used for preparing this Wetland Delineation Report, including the review of existing information and field investigation procedures. These methods are consistent with current Federal, WSDOT, and other state agency requirements.

Wetland Identification, Delineation, and Classification

WSDOT Olympia Service Center and Southwest Region wetland staff performed field reconnaissance and wetland delineations from March through June of 2005 using the Routine Determination Method outlined in the *Washington State Wetland Identification and Delineation Manual* (Ecology, 1997). Wetlands were identified within 200 feet of the centerline of SR 502 between MP 2.55 and MP 6.53, by walking and assessing both sides of the highway, including 1000 feet up arterials (29th, 50th, and 72nd). In general, wetland delineation consisted of three main tasks: (1) assessing vegetation, soil, and hydrologic characteristics to identify areas meeting the wetland identification criteria and recording the observations on field dataforms (Appendix D), (2) evaluating constructed drainage features to determine if they would be regulated as wetlands, and (3) marking wetland boundaries. The surveyed wetland boundaries can be found in Appendix B.

Wetlands were classified according to the U.S. Fish and Wildlife Service (USFWS) system (Cowardin et al., 1979) and rated, by categories, according to the *Washington State Wetland Rating System for Western Washington* – Revised (Hruby, 2004), and by the rating system outlined in Section 40.450.020 of the Clark County Critical Areas Ordinance (CAO). The rating system also served to assess wetland functions. Completed rating forms can be found in Appendix C.

Agency Coordination and Pre-Field Review of Information

The following data sources were reviewed for information on vegetation patterns, topography, drainage, and potential or known wetlands in the project vicinity, and can be found in Appendix A:

- National Wetland Inventory (NWI) maps (Figure 2)
- U.S. Geologic Survey (USGS) 7.5 minute topographic maps (Figure3)

  Natural Resources Conservation Service (NRCS) soils surveys (Figure 4) and county hydric soils lists; (respectively available online at):

  http://www.or.nrcs.usda.gov/pnw_soil/wa_reports.html

http://www.wa.nrcs.usda.gov/technical/soils/county_hydric_lists.html

- Current and historic aerial photographs (WSDOT) (Figure 5)
- Correspondence with Services: USFWS, National Oceanic and Atomspheric Administration (NOAA) Fisheries Service, Washington Department of Fish and Wildlife (WDFW), and Washington Department of Natural Resources (WDNR).

Table 2. Summary of Agency Coordination for Proposed Project

Project area	Local Jurisdiction	Wetland Regulations[1]	Wetland Rating System	Wetland Inventory
MP 2.55 to MP 6.53	Clark County	County: Yes City: No	County has a 5-tier rating system and the Department of Ecology has a 4-tier rating system.	National Wetland Institute (NWI) maps a variety of wetlands within the project corridor (Figure 2)

[1] "Yes" indicates jurisdiction has a critical or sensitive areas ordinance that specifically applies to wetlands.

Threatened, Endangered, and Sensitive Species

Information on threatened, endangered, and sensitive (TES) species and priority habitats potentially occurring in the project area was obtained from the WDNR Natural Heritage Program, the WDFW Priority Habitats and Species Program, the USFWS, and the NMFS databases. This information was used in conjunction with the wildlife and habitat observations to generally assess the potential presence of protected species/habitats in the project area. However, a separate Biological Assessment (BA) process will specifically evaluate the project area for the presence of TES species or their suitable habitat. Potential impacts to TES plant, wildlife, and fish species, as a result of construction and operation of the proposed project, will be identified in that BA.

Habitat for the state sensitive *Trillium parviflorum* was abundant throughout the site and in three locations a specie of *Trillium* was observed, although it was not in flower and therefore could not be identified to specie. The locations of these observations are included in Figure 6 (Appendix A).

AFFECTED ENVIRONMENT

This section describes the existing environment in the project area. It includes information on the area setting and delineated wetlands. Field data sheets for all wetlands delineated or visited by WSDOT are included in Appendix D.

Project Area Setting

Physiographically, the project is situated in the Portland Basin of the Puget Trough Province (Franklin & Dyrness, 1973). The basin's geology and topography is the result of a combination of factors. The ancestral Columbia River filled the basin with sediments, known as the Troutdale Formation. The deposition of the Troutdale Formation was followed by a period of Boring Lava volcanism from 2.6 to 1.3 million years ago, which was associated with faulting and structural deformation of the Troutdale Formation and further depression of the Portland Basin. The last major geologic influence on the Basin was the catastrophic floods from glacial Lake Missoula that burst through the Columbia River Gorge 12,700 to 15,300 years ago. The water from these floods ponded in the Portland Basin depositing well-sorted sand, clay, and gravel in the area.

The landscape throughout the project area is mainly flat with elevations ranging from approximately 200 ft above sea level (asl) to 290 ft asl. The predominant land-uses in the project area are agriculture, livestock production, and low density commercial/residential, with a mixture of native vegetation and pasture species. The project area occupies two different Water Resource Inventory Areas (WRIA's); WRIA 27 (Lewis) to the northwest and WRIA 28 (Salmon-Washougal) to the southeast. Mill Creek passes through the project area numerous times as do

other unnamed ditches and waterways. The city of Battle Ground lies directly to the east of the project boundary and I-5 is located west of the project boundary. The Soil Survey for Clark County (USDA, 1972) shows thirteen soil series mapped for the project area, five of which were listed on the Washington State hydric soils list (USDA): Cove silty clay loam, Hockinson loam, Odne silt loam, Semiahoo muck, and Tisch silt loam. Maps of the project area showing topography and soils are in Appendix A (Figures 3 and 4).

Wetlands

74 wetlands were identified in the project area (Appendix B). The wetlands consist of depressional and riverine hydrogeomorphical classes, and numerous Cowardin classes are present: including; palustrine, forested (PFO); palustrine, emergent (PEM); and palustrine, scrub-shrub (PSS). The biological, chemical, and physical functions provided by these wetlands range from very low to high, with the higher functioning wetlands more prevalent to the north of SR 502. The north side contains 2 Category I wetlands, 9 Category II wetlands, 13 Category III wetlands, and 9 Category IV wetlands, while the south side of SR 502 contains 1 Category I wetland, 2 Category II wetlands, 15 Category III wetlands, and 23 Category IV wetlands according to the *Washington State Wetland Rating System for Western Washington* (Hruby, 2004). Appendix C includes Ecology's field rating forms for each wetland. Complete descriptions of each wetland are provided in this section.

Wetland Summaries (North)

Wetland NA

Wetland NA, looking north

Ecology Rating	II
Clark Co. Rating	II
Cowardin Classification	PEM
HGM Classification	RIV
WRIA	27

Dominant Vegetation

Agrostis capillaris (colonial bentgrass) FAC
Juncus effusus (soft rush) *FACW*

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland NA is a palustrine, emergent (PEM) wetland located north of SR 502 and west of 21st Avenue. The wetland is in a headwater position within the watershed and supports an intermittent, unnamed tributary that flows north to Gee Creek. Wetland NA extends beyond the project boundaries to the north and is part of a larger wetland complex that has palustrine, forested (PFO), palustrine scrub-shrub (PSS), and palustrine emergent vegetation (PEM) classes. Historically Wetland NA and SA were one wetland complex, but the construction of SR 502 bisected the wetland and disrupted the hydrologic connection. Heavy grazing was observed in and adjacent to the wetland, and was responsible for the composition of the vegetation community.

Soils

The soil sampled in Wetland NA exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, a seasonally shallow water table, precipitation, and from a culvert carrying surface water from Wetland SA. At the time of field investigation, areas of the wetland were inundated and/or saturated to the surface and free water was observed in the soil pit at a depth of 13 inches. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.
An intermittent creek was observed flowing from south to north through the wetland, eventually discharging into Gee Creek.

Rating/Functions

Wetland NA ranked as a Category II under Ecology's 4-tier rating system (Appendix C).
Water Quality Functions scored much lower than the scores for Hydrologic Functions and Habitat Functions. This is largely due to the continuous cattle grazing in the wetland, which periodically removes a significant portion of the vegetation allowing surface water to flow across the wetland into the intermittent creek with minimal frictional resistance.
Wetland NA has considerable floodwater storage capacity due to its overall width and size in comparison to the intermittent creek system, although heavy grazing does limit the ability of the wetland to slow down water velocities, and reduce the potential for erosive flows. Therefore, the wetland only provides a moderate level of Hydrologic Functions.
The interspersion of habitats, variety of water regimes, richness of plant species, connectivity to other undisturbed areas, and overall size of the wetland provide considerable Habitat Functions.
Wetland NA and Wetland SA were historically one wetland, but were bisected by the construction of SR 502. The wetlands are not rated as one wetland because a level surface water connection between the two does not exist. The culvert connecting the wetlands appears to have an elevation gradient of greater than 6 inches and water flows through the culvert in one direction, from south to the north.

Wetland NB

Wetland NB, looking north

Ecology Rating	III
Clark Co. Rating	III
Cowardin Classification	PFO
HGM Classification	DEP
WRIA	27

Dominant Vegetation

Populus balsamifera (black cottonwood) FAC
Fraxinus latifolia (Oregon ash) FACW
Acer circinatum (vine maple) FAC-
Geum macrophyllum (largeleaf avens) FACW-
Viola sp.
Carex sp.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	75%

Description/Vegetation

Wetland NB is a palustrine, forested (PFO) wetland located north of SR 502 and west of 21st Avenue. The wetland occupies a topographical depression that appears to have been created through human activity. A gravel road borders the wetland to the west, and separates the wetland from Wetland NA. The road was most likely constructed from the material excavated from Wetland NB, and has since been abandoned. A small area of open water was present in the southwest corner of the wetland and appeared to be the result of excavation. The wetland is bordered to the north by several acres of upland forest.

Soils

The soil sampled in Wetland NB exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Hydrology was principally provided by groundwater, precipitation, and localized overland flow. Field investigations suggest the wetland is seasonally saturated to the soil surface and rarely inundated. Wetland NB was hydrologically isolated from other nearby wetlands. All areas of the wetland were saturated to the surface during the March 9, 2005 site visit. Standing water was observed 6 inches below the surface in the soil pit, suggesting that this site has sufficient saturation during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

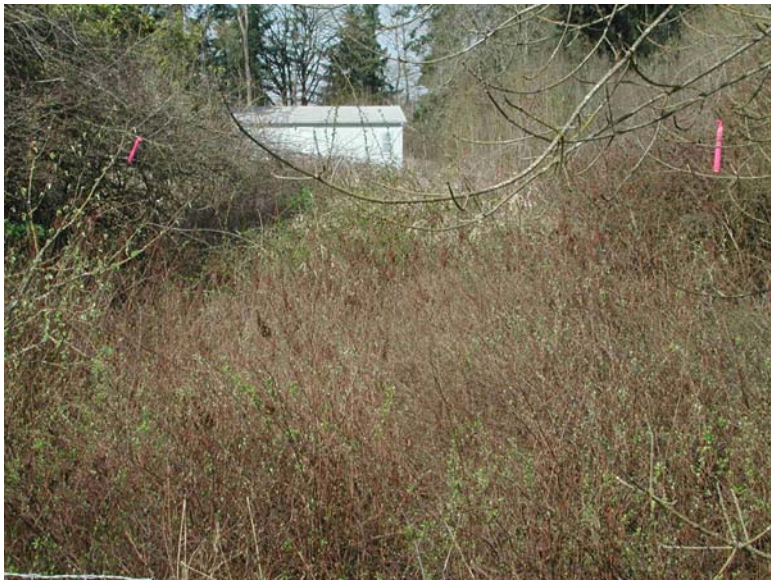
Wetland NB ranked as a Category III under Ecology's 4-tier rating system (Appendix C). This wetland provides moderate Hydrologic and Habitat Functions, and low level Water Quality Functions.

Wetland NB has some potential to provide Water Quality Functions due to its depressional landscape position, lack of outlet, and persistent vegetation. However, opportunity to provide water quality is severely limited due to the apparent lack of pollutant sources.

Wetland NB provides Hydrologic Functions by reducing flooding and erosion. These functions are due primarily to the wetlands lack of outlet and small contributing basin.

Physical features that contribute to Habitat Functions include multiple canopy layers, various water regimes, and portions of relatively undisturbed buffer. Actual habitat functions are somewhat limited by SR 502 to the south, and a chain-link fence surrounding the remainder of the parcel.

Wetland NC



Wetland NC, looking north

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PSS
HGM Classification	DEP
WRIA	27&28

Dominant Vegetation

Spirea douglasii (hardhack) FACW
Rosa nutkana (Nootka rose) FAC

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

This palustrine, scrub-shrub (PSS) wetland is located north of SR 502, and west of 23rd Avenue. WSDOT biologists did not have permission to conduct a subsurface investigation on the land parcel containing this wetland feature. The wetland delineation was therefore conducted using the vegetation parameter with supporting evidence provided by wetland hydrology indicators. A pronounced vegetative and elevational change was evident where the wetland transitioned to upland.
According to the Water Resource Inventory Areas (WRIA) border the wetland lies within both WRIA 27 and 28. After reviewing the USGS topographic map for the area, it was apparent that Wetland NC was in WRIA 28. The construction of SR 502 severed the historical and hydrologic connection between Wetlands NC and SD. A single-family residence borders the wetland to the west.

Soils

Soils were assumed to be hydric based on indications provided by the wetland vegetation community, topography, and saturated soil conditions at this location.

Hydrology

The wetland appears to have seasonal groundwater and precipitation as its primary source of hydrology. Surface saturation was present throughout most of this wetland on March 15, 2005. These findings demonstrate that this site has sufficient saturation during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland NC ranked as a Category IV under Ecology's 4-tier rating system (Appendix C). This wetland appears to provide low levels of hydrologic and habitat functions and moderate water quality functions.
High cover of ungrazed vegetation and close proximity to residential land use suggest a degree of Water Quality Function is provided by this wetland.
Scores for Hydrologic Function and Habitat Function were lower due to the relatively small size of the wetland, the inability of the wetland to impound water or maintain significant levels of inundation, and the lack of structural complexity within the wetland.

Wetland ND & NE

Wetland ND and NE, looking northwest

Ecology Rating	II
Clark Co. Rating	II
Cowardin Classification	PEM & PFO
HGM Classification	RIV
WRIA	27

Dominant Vegetation

Wetland ND
Fraxinus latifolia (Oregon ash) FACW
Populus balsamifera (black cottonwood) FAC
Juncus effusus (soft rush) FACW
Phalaris arundinacea (reed canary grass) FACW

Wetland NE
Alopecurus pratensis (Meadow foxtail) FACW
Poa annua (annual bluegrass) FAC
Compositae spp

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland ND and NE are located north of SR 502 and west of 29th Avenue. Wetland ND is west of, and larger than Wetland NE, and consists of both palustrine, forested (PFO) and palustrine, emergent (PEM) classes. Wetland NE is a small palustrine emergent (PEM) wetland that has been excavated to function as a roadside ditch, and carries water under a driveway to the west through a culvert before discharging into Wetland ND. The wetlands are in a headwaters position within the watershed and an intermittent unnamed tributary flows north through these riverine wetlands into Gee Creek. Historically, these wetlands were connected to SE and SF to the south but a level hydrological connection was severed during the construction of SR 502. Heavy grazing was observed in and adjacent to the wetland.

Soils

The soil sampled in Wetlands ND and NE exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation, a seasonally shallow water table, and from roadside ditch discharge. At the time of field investigation, areas of the wetland were inundated and/or saturated to the surface and free water was observed in the soil pit at a depth of 10 inches at ND-DW1 and at a depth of 14 inches at NE-DW1. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion. An intermittent creek was observed flowing from south to north through the wetland, eventually discharging into Gee Creek.

Rating/Functions

Wetland ND and NE ranked as Category II under Ecology's 4-tier rating system (Appendix C).
Grazing within the wetland provides a source of pollutants, while the depressions within the wetland and moderate coverage of ungrazed vegetation reduce surface water velocities, allowing for the accumulation of sediments and pollutants. These characteristics of the wetland provide moderate Water Quality Functions.
The capacity for overbank water storage within the wetland, and by the ability of the wetland's forested and emergent vegetation classes to slow water velocity provide high hydrologic functions.
The wetland's numerous vegetation classes, various water regimes, presence of large downed, woody debris, and connectivity to a relatively undisturbed and vegetated corridor provide high Habitat Functions.

Wetland NF and SI

Wetland NF, looking east

Ecology Rating	III
Clark Co. Rating	II
Cowardin Classification	PEM&PFO
HGM Classification	DEP
WRIA	27

Dominant Vegetation

Wetland NF (PEM)
Juncus effusus (soft rush) FACW
Agrostis capillaris (colonial bentgrass)FAC
Lolium arundinaceum (tall fescue) FAC-

Wetland SI (PFO)
Fraxinus latifolia (Oregon ash) FACW
Betula papyrifera (paper birch) FAC
Cornus sericea (red-osier dogwood) FACW
Lonicera involucrata (twinberry) FAC+
Carex obnupta (slough sedge) OBL

Percent of Dominant Secies that are OBL, FACW or FAC (excluding FAC-)	88%

Description/Vegetation

Wetland NF is a palustrine, emergent (PEM) wetland and wetland SI is a palustrine, forested (PFO) wetland located north and south of SR 502 respectively and east of 29th Avenue. The wetlands were historically one wetland complex and are connected by a culvert that provides a level surface water connection between the two parts. Wetland NF was intensively grazed at the time of field investigation.
A *Trillium sp.* was observed in Wetland SI, but was unable to be identified to the species level due to the time of the growing season. A follow up investigation is recommended in order to determine if the specie observed was the state sensitive *Trillium parviflorum*.

Soils

The soil sampled in Wetlands NF and SI exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetlands are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation, a seasonally shallow water table, and from roadside ditch discharge. At the time of field investigation, drainage patterns were observed in Wetland SI, areas of both wetlands were inundated and/or saturated to the surface and free water was observed in the soil pit at a depth of 3 inches in Wetland SI and 13 inches in NF. These findings demonstrate the areas have sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.
A culvert provides a level surface water connection between the two wetlands.

Rating/Functions

Wetlands NF and SI were scored as one wetland, and ranked as a Category III wetland under Ecology's 4-tier rating system (Appendix C). Scores for the broad categories of Water Quality Functions, Hydrologic Functions, and Habitat Functions were relatively even. Although onsite grazing provides ample opportunity for Water Quality Function, potential is limited due to the relatively low cover of ungrazed vegetation, and low degree to which the site impounds water.
Hydrologic Functions are low to moderate due to the shallow depth of water storage and the wetlands connectivity to roadside ditches. Habitat Functions are limited due to the proximity of the wetlands to residential developments and roadways. The various water regimes of Wetland NF and the structural complexity of the vegetation in Wetland SI contribute some Habitat Functions to the overall wetland complex.

Wetland NG & NH

Wetland NH, looking north

Ecology Rating	II
Clark Co. Rating	II
Cowardin Classification	PFO
HGM Classification	DEP
WRIA	27

Dominant Vegetation

Wetland NG
Fraxinus latifolia (Oregon ash) FACW
Lonicera involucrata (twinberry) FAC+
Carex obnupta (slough sedge) OBL
Epilobium ciliatum (Fringed willowherb) FACW-
Veratrum viride (green false hellebore) OBL

Wetland NH
Fraxinus latifolia (Oregon ash) FACW
Cornus sericea (red-osier dogwood) FACW
Holcus lanatus (common velvetgrass) FAC
Poa trivialis (rough bluegrass) FACW
Rubus Armeniacus (Himalayan blackberry) FACU

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	90%

Description/Vegetation

Wetlands NG and NH are palustrine, forested (PFO) wetlands located north of the SR 502 and 29th Avenue intersection, at the northern extent of the project boundary. Historically, NG and NH were part of one large wetland complex that extends north and west beyond the project boundary. Although the construction of 29th Avenue bisected the wetland, a level surface water connection was maintained via a culvert beneath 29th Avenue. These wetlands are at the headwaters of an intermittent, unnamed tributary that flows northwest to Gee Creek.

Soils

The soil sampled in Wetlands NG and NH exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent wetlands, precipitation, a shallow groundwater table, and seasonal flooding events of the unnamed tributary to Gee Creek which runs through the wetlands. Both wetlands were inundated or saturated within 12 inches of the surface on May 12, 2005. The presence of drainage patterns provided another primary indicator of wetland hydrology. These findings suggest there is sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.
A culvert provides a level hydrologic connection between the two wetlands underneath 29th Ave.

Rating/Functions

Wetland NG & NH ranked as a Category II under Ecology's 4-tier rating system (Appendix C).
Hydrologic Functions were rated high largely because these are considered flood-attenuating headwater wetlands.
Water Quality and Habitat Functions are provided to a lesser extent. Dense ungrazed vegetation and seasonally ponded areas provide significant Water Quality Functions. Habitat functions are supported by the vegetative structure and the connectivity of the wetlands to other undisturbed areas.

Wetland NGG

Wetland NGG, looking north

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	27

Dominant Vegetation

Phalaris arundinacea (reed canary grass) FACW
Populus balsamifera (black cottonwood) FAC

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland NGG is a small, isolated, palustrine emergent (PEM) fringe wetland located north of SR 502, west of 29th Avenue, and just south of Wetland NG. The wetland encircles an excavated, permanently inundated pond. The landscape surrounding the wetland has been graded/disturbed through earth moving activity and was heavily grazed by Pygmy goats.

Soils

The soil sampled in Wetland NGG exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

The pond itself is fed by groundwater, precipitation, and overland flow from adjacent uplands. On March 31, 2005 the pond depth was estimated to be 6 feet at its deepest point. The slopes of the pond are relatively steep resulting in a narrow band around the pond where the wetland criteria are met. Inundation and soils that were saturated to the surface were present within the designated wetland boundary of Wetland NGG, thus satisfying the wetland criterion for hydrology.

Rating/Functions

Wetland NGG ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
This wetland performs moderate Water Quality Functions while Hydrologic Functions and Habitat Functions were rated relatively low.
Wetland NGG has some potential to provide Water Quality Functions due to the depressional nature of the pond and lack of surface outlet.
Although the pond is inundated, the wetland fringe itself does not provide significant Hydrologic Functions. Physical features that contribute to habitat functions include areas that are occasionally flooded, areas that are saturated to the surface, and portions of relatively undisturbed buffer. Habitat Functions were rated low due to the wetlands lack of vegetative structure and other habitat features.

Wetland NI & NJ

Wetland NJ, looking northwest

Ecology Rating	III
Clark Co. Rating	III
Cowardin Classification	PFO & PEM
HGM Classification	DEP
WRIA	27

Dominant Vegetation

Wetland NI
Populus balsamifera (black cottonwood) FAC
Juncus effusus (soft rush) FACW

Wetland NJ-DW1 (PFO)
Fraxinus latifolia (Oregon ash) FACW
Populus balsamifera (black cottonwood) FAC
Epilobium ciliatum (fringed willowherb) FACW-
Claytonia sibirica (siberian springbeauty) FAC
Cardamine penduliflora (Willamette Valley bittercress) OBL

NJ-DW2(PEM)
Juncus effusus (soft rush) FACW
Epilobium ciliatum (fringed willowherb) FACW-
Anthoxanthum odoratum (sweet vernalgrass) FACU

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	90%

Description/Vegetation

Wetlands NI and NJ are located north of SR 502 and east of 37th Avenue. They are both part of a large wetland complex that extends beyond the project boundary to the north. Wetland NI is a palustrine, emergent (PEM) wetland that is bordered to the west by a single-family residence. Wetland NJ is a palustrine, forested (PFO) and palustrine, emergent (PEM) wetland complex that has recently been cleared/disturbed, and large debris piles were observed throughout the wetland. The wetland delineation was conducted using notes from a previous wetland report.

Soils

The soil sampled in Wetlands NI and NJ exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation, and a seasonally shallow water table. Areas of inundation and/or surface saturation were observed throughout the wetlands on March 21, 2005. The presence of drainage patterns and sediment deposits in the wetland were primary indicators of wetland hydrology; water-stained leaves were noted as a secondary indicator. These findings suggest there is sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland NI & NJ ranked as a Category III under Ecology's 4-tier rating system (Appendix C).
Water Quality Functions were limited due to the recent grading/clearing of Wetland NJ and the connection of the wetland complex to roadside ditches.
The wetland complex provides considerable Hydrologic Function due to its headwater position within the landscape, which increases its potential to reduce flooding and erosive flow.
Habitat Functions are provided by the structural complexity of the vegetation, the various water regimes present in the wetland, the richness of plant species, and the interspersion of various habitats.

Wetland NK

Wetland NK, looking south

Ecology Rating	III
Clark Co. Rating	II
Cowardin Classification	PFO & PEM
HGM Classification	DEP
WRIA	27

Dominant Vegetation

Wetland NK-DW1 (PFO)
Carex obnupta (slough sedge) OBL
Lysichiton americanus (skunkcabbage) OBL
Fraxinus latifolia (Oregon Ash) FACW
Cornus sericea (red-osier dogwood) FACW
Physocarpus capitatus (Pacific ninebark) FACW

Wetland NK-DW2 (PEM)
Veronica americana (American speedwell) OBL
Ranunculus repens (creeping buttercup) FACW
Unidentifiable grass

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland NK is a palustrine, forested (PFO) and emergent vegetation (PEM) wetland complex located north of SR 502 and west of 50th Avenue. The wetland is in a headwater position within the watershed with an intermittent stream running within its boundaries to the north. The area has been heavily disturbed through grazing and land clearing, and a large manure pile is situated within the wetland boundaries. Historically Wetland NK and SN were one wetland complex, but the construction of SR 502 bisected the wetland.

Soils

The soil sampled in Wetland NK exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by overland flow from adjacent uplands, precipitation, and a seasonally shallow water table. Hydrology also enters the site from Wetland SN via a culvert beneath SR 502. At the time of field investigation, all areas of the wetland were inundated or saturated within 12 inches of the soil surface. Free water was observed in the soil pit at NK-DW1 12 inches below the surface. Drainage patterns provided another primary indicator of wetland hydrology. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland NK ranked as a Category II under Ecology's 4-tier rating system (Appendix C).
Water Quality Functions received a moderate score due to the prevalence of water quality improving vegetation and the relative absence of depressional areas that would assist in trapping of pollutants.
This wetland received the highest possible rating for Hydrologic Functions. The dense, velocity reducing vegetation and the large amount of over bank storage relative to the stream channel are characteristics that contribute to this wetland's significant hydrologic function.
Habitat Functions were rated moderately. Varied water regimes and multiple vegetation classes are elements of this wetland that contribute to habitat functions.
Wetland NK and Wetland SN were historically one wetland, but were bisected by the construction of SR 502. The wetlands are not rated as one wetland because a level surface water connection between the two does not exist. The culvert connecting the wetlands appears to have an elevation gradient of greater than 6 inches and water flows in one direction, from south to the north.

Wetland NL

Wetland NL, looking north

Ecology Rating	III
Clark Co. Rating	III
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	27

Dominant Vegetation

Alopecurus geniculatus (water foxtail) OBL
Vicia sativa (garden vetch) NL
Ranunculus repens (creeping buttercup) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	67%

Description/Vegetation

Wetland NL is a palustrine, emergent (PEM) wetland located north of SR 502 and west of 50th Avenue. The wetland surrounds a single-family residence and extends beyond the project limits to the west. A linear trench-like feature, possibly installed to assist drainage, runs north and serves as a constricted outlet of the wetland.

Soils

The soil sampled in Wetland NL exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow, precipitation, and a seasonally shallow water table. Field investigations suggest the wetland is likely seasonally saturated to the soil surface and has partial seasonal inundation. Nearly all areas of the wetland were saturated to the surface during the March 9, 2005 site visit. Free water was observed in the soil pit at a depth of 8 inches. Drainage patterns in the wetland provided an additional primary indicator of wetland hydrology. These findings indicate that Wetland NL has sufficient saturation during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland NL ranked as a Category III under Ecology's 4-tier rating system (Appendix C). This wetland performs moderate Hydrologic Functions and Habitat Functions with Water Quality Functions rated slightly higher.
This wetland's constricted outlet, dense emergent vegetation cover, and seasonal inundation likely contribute to water quality improvement.
Levels of seasonal inundation are not significant, limiting the level of Hydrologic Function.
Habitat Functions are also minimal due to lack of vegetative structure and other habitat features.

Wetland NN/SU

Wetland NN, looking northeast

Ecology Rating	I
Clark Co. Rating	I
Cowardin Classification	PEM
HGM Classification	RIV
WRIA	27 & 28

Dominant Vegetation

Poa annua (annual bluegrass) FAC
Ranunculus repens (creeping buttercup) FACW
Juncus effusus (soft rush) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetlands NN and SU are palustrine, emergent (PEM) wetlands located on both sides of SR 502 that begin approximately 1000' west of 72nd Avenue. The wetland complex inhabits two WRIA's (27 & 28) and extends beyond the project boundaries both to the north and south, and is part of a larger wetland area. An unnamed tributary flows through the wetland and is carried under SR 502 by a gated box culvert. The water observed in the culvert appeared to be level on both sides of the road, and according to the WRIA line was flowing both to the north and the south. The northward flowing unnamed tributary eventually discharges into the East Fork of the Lewis River, and the southward flowing tributary discharges into Mill Creek. The wetland was being used as pasture for a variety of livestock, mainly horses. The eastern edge of the northern wetland has been filled to create a horse corral, and the eastern edge of the southern wetland has been filled, but was not being utilized at the time of investigation.

Soils

The soil sampled in Wetlands NN and SU exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation, stormwater discharge from roadside ditches, a seasonally shallow water table, and from seasonal high flow events of the unnamed tributary and Mill Creek. Numerous culverts connect the two wetlands including a large box culvert that carries the unnamed tributary under SR 502.

At the time of field investigation, areas of inundation up to 11 inches deep were observed throughout the wetlands, free water was observed in the soil pit at a depth of 1 inch at NN-DW1, and oxidized root channels associated with living plantt material were observed within 12 inches of the surface. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Conversations with local residents also confirmed wetland hydrology. They described yearly flooding events that lasted for at least 2 consecutive weeks and would infrequently submerge SR 502 for extended durations.

Rating/Functions

Wetland NN/SU ranked as a Category I under Ecology's 4-tier rating system (Appendix C).

The ability of the wetland to improve water quality can be attributed to the large areas of surface depressions within the wetland and the presence of ungrazed emergent vegetation. The surrounding land uses are major sources of pollutants, and the above-mentioned characteristics of the wetland help provide protection of downstream water quality.

Wetland NN/SU has excellent floodwater storage capacity due to its overall width and size in comparison to Mill Creek, and the persistent vegetation in the wetland slows down water velocities, reducing the potential for erosive flows. These Hydrologic Functions protect downstream properties and aquatic resources.

The interspersion of habitats, variety of water regimes, richness of plant species, relatively undisturbed buffer, connectivity to other undisturbed areas, and overall size of the wetland provide considerable Habitat Functions.

Wetland NN and Wetland SU were historically one wetland, but were bisected by the construction of SR 502.The wetlands were rated as one wetland because the culverts connecting them provide a level surface water connection, allowing flow in either direction.

Wetland NO

Wetland NO, looking north

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	27

Dominant Vegetation

Populus balsamifera (black cottonwood) FAC
Juncus effusus (soft rush) FACW
Agrostis capillaris (colonial bentgrass) FAC

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland NO is a highly disturbed palustrine, emergent (PEM) wetland located north of SR 502 and west of 72nd Avenue. It appears as if the area the wetland occupies was graded and prepared for land development and then abandoned. Wetland NO is bordered by parking lots to the south and other impervious areas to the east. It is bordered on the west by an upland forest, and on the north by a similarly disturbed area that is dominated by upland grasses and forbs.

Soils

The presence of fill material limited the subsurface investigation. It was assumed that the soil was hydric due to the observation of prolonged periods of inundation and hydrophytic vegetation.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation, and a seasonally shallow water table. At the time of field investigation, all areas of the wetland were inundated and/or saturated to the surface. At the soil pit, the soil was saturated to the surface. Drainage patterns provided another primary indicator of wetland hydrology. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland NO ranked as a Category IV under Ecology's 4-tier rating system (Appendix C). Scores in all categories of functions were relatively low.

This wetland has the potential to provide some level of Water Quality and Hydrologic functions due its position within the watershed and lack of surface water outlet. However, it lacks cover of persistent ungrazed vegetation and does not impound significant levels of water.

The area containing this wetland feature is generally degraded and lacks vegetative structure and other characteristics that would support Habitat Functions.

The site appears to have been filled with sandy, gravelly soil, and is adjacent to a gravel parking lot that appears to have been constructed out of fill material.

Wetland NQ

Wetland NQ, looking north

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Alopecurus pratensis (Meadow foxtail) FACW
Phalaris arundinacea (reed canary grass) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland NQ is a palustrine, emergent (PEM) wetland located north of SR 502 and west of 82nd Avenue. A parking lot and commercial development are located directly to the west, and the wetland appears to be heavily disturbed. At the time of field investigation the area was vegetated, but during subsequent visits the area had been mowed. A large pasture area exists to the north, but is heavily fragmented by fences. The wetland is connected to a roadside ditch and may receive backflow discharge from the ditch during highflow events, and also may discharge water into the ditch during normal precipitation events.

Soils

The soil sampled in Wetland NQ exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation, and a seasonally shallow water table. The wetland outlets into a roadside ditch and may receive backflow during high precipitation events. At the time of field investigation, areas of inundation up to 2 inches deep were observed throughout the wetland. The soil pit at the datapoint was saturated to the surface and oxidized root channels associated with living plant material were observed within 12 inches of the surface. These findings demonstrate that the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland NQ ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
Due to the small size and lack of structural diversity, the functions of the wetland are minimal and limited largely to water quality improvement.

Wetland NR

Wetland NR, looking west

Ecology Rating	I
Clark Co. Rating	I
Cowardin Classification	PSS
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Juncus effusus (soft rush) FACW
Carex obnupta (slough sedge) OBL
Fraxinus latifolia (Oregon ash) FACW
Spirea douglasii (hardhack) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland NR is a palustrine, scrub-shrub (PSS) wetland located north of SR 502 and west of 84th Avenue. Wetland NR extends beyond the project boundaries to the northwest and is part of a larger wetland complex that has palustrine, forested (PFO), palustrine, scrub-shrub (PSS), and emergent vegetation (PEM) classes. The wetland is bordered to the northeast and east by upland areas that appear to have been created through earth moving activity, and are now dominated by upland vegetation. Historically Wetlands NS and NR were one wetland complex, but the construction of 84th Avenue and other land development activity effectively disrupted the hydrologic connection.

Soils

The soil sampled in Wetland NR exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands and a seasonally shallow water table. The wetland outlets into a roadside ditch and may receive backflow during high precipitation events.
At the time of field investigation, areas of inundation up to 10 inches deep, water stained leaves, and wetland drainage patterns were observed throughout the wetland. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland NR ranked as a Category I under Ecology's 4-tier rating system (Appendix C).
The ability of the wetland to improve water quality can be attributed to the highly constricted outlet of the wetland, the large areas of persistent emergent vegetation and the large areas of seasonal ponding throughout the wetland.
Wetland NR is south of Mill Creek and provides significant Hydrologic Functions by storing surface water that would otherwise be a source of flooding and erosive flows.
The interspersion of habitats, richness of plant species, variety of water regimes, relatively undisturbed buffer, and overall size of the wetland provide considerable Habitat Functions.

Wetland NS

Wetland NS, looking east

Ecology Rating	II
Clark Co. Rating	II
Cowardin Classification	PEM/PSS
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Juncus effusus (soft rush) FACW
Phalaris arundinacea (reed canary grass) FACW
Spirea douglasii (hardhack) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland NS is a palustrine, emergent (PEM) and palustrine, scrub-shrub (PSS) wetland located north of SR 502 and east of 84th Avenue. Wetland NS extends beyond the project boundary to the north and is part of a larger wetland complex that has palustrine, forested (PFO), palustrine, scrub-shrub (PSS), and palustrine, emergent vegetation (PEM) classes. The wetland appears to connect with the Mill Creek riparian corridor and provides significant Water Quality, Hydrolgic, and Habitat Functions. Historically Wetland NS and NR were one wetland complex, but the construction of 84th Avenue and other land development activity effectively disrupted the hydrologic connection.

Soils

The soil sampled in Wetland NS exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation, and a seasonally shallow water table. At the time of field investigation, areas of inundation up to 4 inches deep, water stained leaves, and wetland drainage patterns were observed throughout the wetland. The soil sampled at the datapoint was saturated to the surface, and free water was observed in the soil pit at a depth of 3 inches. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland NS ranked as a Category II under Ecology's 4-tier rating system (Appendix C).
The ability of the wetland to improve water quality can be attributed to the highly constricted outlet of the wetland, the large areas of persistent emergent vegetation, and the large areas of seasonal ponding throughout the wetland.
Wetland NS is south of Mill Creek and provides significant Hydrologic Functions by storing surface water that would otherwise be a source of flooding and erosive flows.
The interspersion of habitats, richness of plant species, variety of water regimes, relatively undisturbed buffer, and overall size of the wetland provide considerable Habitat Functions.

Wetland NT

Wetland NT, looking west

Ecology Rating	II
Clark Co. Rating	II
Cowardin Classification	PEM/PFO
HGM Classification	DEP
WRIA	28

Dominant Vegetation

NT-DW1 (PFO)
Cardamine penduliflora (Willamette Valley bittercress) OBL
Fraxinus latifolia (Oregon ash) FACW

NT-DW2 (PEM)
Juncus effusus (soft rush) FACW
Lotus corniculatus (bird's-foot trefoil) FAC
Phalaris arundinacea (reed canary grass) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland NT is a palustrine, emergent (PEM) and palustrine, forested (PFO) wetland complex located north of SR 502 and east of 84th Avenue. The wetland is across the street from Northwest Pipeline and is bordered to the west by a single-family residence. The wetland is composed of two Cowardin classes, PFO and PEM, and is located within a topographic depression. A maintained utility right-of way crosses the wetland and extends to the northwest.

A *Trillium sp*. was observed in the forested part of the wetland, but identification was limited due to the time of year. Further investigation is suggested in order to determine if the specie present is the state sensitive *Trillium parviflorum*.

Soils

The soil sampled in Wetland NT exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation, a seasonally shallow water table, and discharge from a roadside ditch. At the time of field investigation, areas of inundation up to 12 inches deep and wetland drainage patterns were observed throughout the wetland. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland NT ranked as a Category II under Ecology's 4-tier rating system (Appendix C).

The ability of the wetland to improve water quality can be attributed to the intermittingly flowing outlet of the wetland, the cover of persistent emergent vegetation and the large seasonally ponded areas throughout the wetland.

Wetland NS is south of Mill Creek and provides Hydrologic Function by storing surface water that would otherwise be a potential source of flooding and erosive flows.

The structural complexity provided by the different vegetation types, interspersion of habitats, richness of plant species, variety of water regimes, and relatively undisturbed buffer furnish considerable Habitat Functions.

Wetland NU

Wetland NU, looking east

Ecology Rating	III
Clark Co. Rating	III
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Anthoxanthum odoratum (sweet vernal grass) FACU
Holcus lanatus (common velvetgrass) FAC
Juncus effusus (soft rush) FACW
Lotus corniculatus (bird's-foot trefoil) FAC
Ranunculus acris (tall buttercup) FACW-

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	80%

Description/Vegetation

Wetland NU is located north of SR 502 and east of 84th Avenue. The wetland is a palustrine, emergent (PEM) wetland that extends beyond the project boundaries to the north and is part of a larger wetland complex that consists of palustrine, forested (PFO) and palustrine, scrub-shrub (PSS) communities. The wetland complex borders the Mill Creek riparian corridor and contributes baseflow to the creek. The area appears to be utilized for hay production and is probably harvested at least once a year.

Soils

The soil sampled in Wetland NU exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation, and a seasonally shallow water table. At the time of field investigation, areas of inundation up to 3 inches deep and wetland drainage patterns were observed throughout the wetland. The soil sampled at the datapoint was saturated to the surface. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland NU ranked as a Category III under Ecology's 4-tier rating system (Appendix C).
The ability of the wetland to improve water quality can be attributed to the highly constricted outlet of the wetland, the large area of persistent emergent vegetation and the areas of seasonal ponding throughout the wetland.
Wetland NU is south of Mill Creek and provides Hydrologic Functions by storing surface water that would otherwise be a source of flooding and erosive flow.
The interspersion of habitats, richness of plant species, variety of water regimes, relatively undisturbed buffer, proximity to other wetlands, and overall size of the wetland provide considerable Habitat Functions.

Wetland NX

Wetland NX looking north

Ecology Rating	II
Clark Co. Rating	II
Cowardin Classification	PFO & PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

NX-DW1 (PEM)

Rumex crispus (curly dock) FAC+
Montia linearis (narrowleaf minerslettuce) NL
Lolium arundinaceum (tall fescue) FAC-
Myosotis laxa (bay forget-me-not) OBL

NX-DW2 (PFO)

Fraxinus latifolia (Oregon ash) FACW
Spiraea *douglasii* (hardhack) FACW
Rosa nutkana (Nootka rose) FAC
Phalaris arundinacea (reed canary grass) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	75%

Description/Vegetation

Wetland NX is a palustrine, emergent (PEM) and palustrine, forested (PFO) wetland complex located north of SR 502 and just east of 97th Avenue. The western PEM portion of the wetland appears to have been cleared/disturbed through earth moving activities. A single family residence, apparently established on fill material, is surrounded by this wetland on the west, north, and east. The wetland extends beyond the property boundaries to the north.

Soils

The soil sampled in Wetland NX exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by precipitation, overland flow from adjacent wetlands, roadside ditch discharge, and a seasonally shallow water table. Portions of the wetland showed shallow inundation on May 2, 2005. Other locations showed saturation to the soil surface or within 12 inches of the surface. These findings demonstrate that Wetland NX has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland NX ranked as a Category II under Ecology's 4-tier rating system (Appendix C).
Water Quality Functions are provided by the following characteristics of the wetland: greater than 95% cover of persistent ungrazed vegetation, seasonal ponding over more than half the total area of the wetland, and the proximity of the wetland to residential areas and roadways.
The amount of water storage observed in the wetland is evidence that the area reduces flooding and erosion, providing a significant Hydrologic Function to the watershed.
The habitat functions provided by the wetland can be attributed to the complexity of the vegetation structure, the various water regimes, richness of plant species, interspersion of habitats, relatively undisturbed buffers, and connectivity to other undisturbed areas.

Wetland NY

Wetland NY looking north

Ecology Rating	III
Clark Co. Rating	III
Cowardin Classification	PFO & PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Fraxinus latifolia (Oregon ash) FACW
Populus balsamifera (black cottonwood) FAC
Phalaris arundinacea (reed canarygrass) *FACW*

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland NY is a palustrine, emergent (PEM) and palustrine, forested (PFO) wetland complex located north of SR 502 and east of 92nd Avenue. It is located in a topographic depression adjacent to SR 502.

Soils

The soil sampled in Wetland NY exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Groundwater and precipitation are considered to be the principal sources of hydrology. On May 2, 2005 all of Wetland NY was either inundated or saturated to the surface. Water-stained leaves were also present providing a secondary indicator that Wetland NY has saturation or ponding for sufficient duration during the growing season to meet wetland hydrology criterion.

Rating/Functions

Wetland NY ranked as a Category III under Ecology's 4-tier rating system (Appendix C).
The Water Quality Functions of this wetland were rated relatively high. This residentially located wetland is heavily vegetated and has a distinct anoxic smell indicating the wetland can remove a wide range of pollutants from surface water. The hydrologic functions of this wetland were rated low partially due to the connection of the wetland to a roadside ditch.
To a lesser degree this wetland performs Habitat Functions. Although this wetland is relatively small, it has structural diversity, species diversity, and multiple hydrologic regimes present, all of which provide habitat value.

Wetland NZ

Wetland NZ, looking northeast

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Poa trivialis (rough bluegrass) FACW
Leontodon taraxacoides (lesser hawkbit) NL
Ranunculus repens (creeping buttercup) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	67%

Description/Vegetation

Wetland NZ is a depressional palustrine, emergent wetland (PEM) located north of SR 502 and east of 92nd Avenue, in the front lawn of a single-family residence.

Soils

The soil sampled in Wetland NZ exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by seasonal groundwater, precipitation, and roadside ditch discharge during highflow events. The entirety of this wetland was inundated or saturated to the soil surface on May 12, 2005, and free water was observed in the soil pit at a depth of 4 inches. Observations suggest this wetland has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland NZ ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
Scores for the broad categories of Water Quality Functions, Hydrologic Functions, and Habitat Functions were all relatively low. This wetland is a very small depression in a field of mowed vegetation. It's landscape position, lack of size and complexity, and inability to impound a significant quantity of water contribute to its lack of provided functions.

Wetland NAA

Wetland NAA, looking northwest

Ecology Rating	II
Clark Co. Rating	I
Cowardin Classification	PFO
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Fraxinus latifolia (Oregon ash) FACW
Geum macrophyllum (largeleaf avens) FACW-
Holcus lanatus (common velvetgrass) FAC
Juncus effusus (soft rush) FACW
Lonicera involucrata (twinberry) FAC+
Spirea douglasii (hardhack) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland NAA was a palustrine, forested (PFO) wetland located north of SR 502 and approximately 1200 feet east of 92nd Avenue. The wetland extended to the north beyond the property boundaries and is part of a larger undisturbed area of uplands and wetlands that provides significant habitat for wildlife.

Soils

The soil sampled in Wetland NAA exhibited a low chroma matrix, redoximorphic features within 10 inches of the surface, and at NAA-DW1 emitted a Sulfidic odor. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation and a seasonal shallow water table. At the time of field investigation, areas of inundation over 1 foot deep were observed, as were wetland drainage patterns. The soil sampled at datapoint NAA-DW2 was saturated to the surface and free water was observed in the pit at a depth of 6 inches, and the soil sampled at NAA-DW1 was inundated by approximately 4 inches of water. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland NAA ranked as a Category II under Ecology's 4-tier rating system (Appendix C).
The ability of the wetland to improve water quality can be attributed to the highly constricted outlet of the wetland, the large areas of persistent emergent vegetation and the large areas of seasonal ponding throughout the wetland.
Wetland NAA has the potential to store surface water that would otherwise be a source of flooding and erosive flows, thereby providing significant Hydrologic Functions.
The interspersion of habitats, structural complexity associated with the different vegetation types, richness of plant species, variety of water regimes, relatively undisturbed buffer, and overall size of the wetland provide considerable Habitat Functions.

Wetland NAB

Wetland NAB looking west and south

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM, PFO
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Fraxinus latifolia (Oregon ash) FACW
Holcus lanatus (common velvetgrass) FAC

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland NAB is a palustrine, forested (PFO) and palustrine, emergent (PEM) wetland complex located north of SR 502 and approximately 1400 feet east of 92nd Avenue. The wetland was located in the front yard of a single-family residential complex, and the emergent portion of the wetland was mowed and regularly maintained.

Soils

The soil sampled in Wetland NAB exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation, and a shallow water table. At the time of field investigation, the soil sampled at the datapoint was saturated at the surface and free water was observed at the surface of the pit. Areas of the wetland were inundated with 4 inches of water. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland NAB ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
Scores for the broad categories of Water Quality Functions, Hydrologic Functions, and Habitat Functions were all relatively low.

Wetland NAC

Wetland NAC, looking west

Ecology Rating	III
Clark Co. Rating	III
Cowardin Classification	PFO
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Fraxinus latifolia (Oregon ash) FACW
Claytonia sibirica (siberian springbeauty) FAC
Maianthemum dilatatum (false-lily-of-the-valley) FACU-
Tellima grandiflora (bigflower tellima) NL
Ranunculus sp. (buttercups) N/A

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	60%

Description/Vegetation

Wetland NAC is a palustrine, forested (PFO) wetland located north of SR 502 and east of 97th street. The Battle Ground Animal Hospital borders Wetland NAC to the west and a paved driveway borders the wetland to the east. A very small upland hummock dominated by *Corylus cornuta* (beaked hazelnut) and *Polystichum munitum* (western swordfern) is completely enclosed within the wetland.

Soils

The soil sampled in Wetland NAC exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation, and a seasonally shallow water table. All wetland areas showed saturation at or near the surface on May 18, 2005, and free water was observed in the soil pit at a depth of 4 inches. These findings suggest that Wetland NAC has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland NAC ranked as a low Category III under Ecology's 4-tier rating system (Appendix C).
Scores for the broad categories of Water Quality Functions and Habitat Functions were relatively even, with Hydrologic Functions being provided to a slightly lesser degree. Although this is a forested wetland with three vegetative layers, its inability to impound water or maintain significant levels of inundation, and lack of interspersed habitat types are factors that kept it from achieving an Ecology Category II rating.

Wetland NAD

Wetland NAD, looking west

Ecology Rating	IV
Clark Co. Rating	III
Cowardin Classification	PFO
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Populus balsamifera (black cottonwood) FACW
Juncus sp. (rushes)
Carex sp. (sedges)
Acer circinatum (vine maple) FAC-

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

This very small isolated palustrine, emergent wetland (PEM) is located in a topographic depression north of SR 502 and east of 92nd Avenue between Wetlands NC and NE. The *Carex* and *Juncus spp.* observed are most likely one of the more common hydrophytes known to occur in the area.

Soils

The soil sampled in Wetland NAD exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by overland flow, precipitation, and by a seasonally shallow water table. On May 18, 2005 all areas of the site were saturated to the surface or inundated to less than 2 inches. At NAD-DW1, free water was observed in the soil pit at a depth of 4.0 inches. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland NAD ranked as a high Category IV under Ecology's 4-tier rating system (Appendix C).
Scores for the broad categories of Water Quality Functions, Hydrologic Functions, and Habitat Functions were all relatively low. This wetland is very small depression surrounded by forested upland vegetation. It's landscape position, lack of size and complexity, lack of opportunity to improve water quality, and inability to impound significant quantities of water contribute to its lack of provided functions.

Wetland NAE

Wetland NAE, looking south

Ecology Rating	III
Clark Co. Rating	III
Cowardin Classification	PFO
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Fraxinus latifolia (Oregon ash) FACW
Ranunculus repens (creeping buttercup) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland NAE is a linear ditch-like palustrine, forested (PFO) wetland feature located north of SR 502 and east of 92nd Avenue. This wetland appears to have been created by human activity possibly with the purpose of dewatering land north of the project boundary. Water runs from north to south through the wetland before discharging into the ditch on the north side of SR 502.

Soils

The soil sampled in Wetland NAE exhibited a low chroma matrix within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by overland flow, precipitation, and by a seasonally shallow water table. This ditch-like wetland serves to carry water from wetland areas to the north of the area of investigation, into a ditch on SR 502. On May 18, 2005 all areas of the site were saturated to the surface or inundated to a maximum of 6 inches. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland NAE ranked as a low Category III under Ecology's 4-tier rating system (Appendix C).
Scores for the broad categories of Water Quality Functions and Hydrologic Functions were rated low, with Habitat Functions rated slightly higher.
This wetland has the potential, but not the opportunity to provide water quality functions, as there are no apparent sources of pollutants entering the wetland. Hydrologically, it does not have the capacity to store significant quantities of water. Habitat functions were slightly higher due to the presence of multiple water regimes, vegetation classes, and relatively undisturbed buffer.

Wetland NAF

Wetland NAF, looking west

Ecology Rating	III
Clark Co. Rating	III
Cowardin Classification	PFO
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Cornus sericea (redosier dogwood) FACW
Claytonia sibirica (siberian springbeauty) FAC
Ranunculus repens (creeping buttercup) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland NAF is a palustrine, forested (PFO) wetland located about 200 feet north of SR 502 near the project boundary at its eastern extent. The wetland extends to the north beyond the project boundary, and appears to be isolated and topographically positioned in a closed depression.

Soils

The soil sampled in Wetland NAF exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by precipitation, a seasonally shallow water table, and overland flow from adjacent uplands. At the time of field investigation, areas of the wetland were saturated to the surface, and free water was observed in the soil pit at a depth of 4 inches. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland NAF ranked as a Category III under Ecology's 4-tier rating system (Appendix C).
Water Quality Functions were rated higher than Hydrologic Functions and Habitat Functions.
Seasonal ponding, the wetland's depressional nature, and lack of surface water outlet contribute to the performance of Water Quality Functions.
Wetland NA does not have much potential for reducing flooding and erosion due to its small size and isolated location.
Habitat Function was limited due to this site's lack of complexity and special habitat features.

Wetland NAG

Wetland NAG, looking north

Ecology Rating	III
Clark Co. Rating	III
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

NAG-DW1
Alopecurus geniculatus (water foxtail) OBL
Epilobium ciliatum (fringed willowherb) FACW-
Ranunculus repens (creeping buttercup) FACW

NAG-DW2
Phalaris arundinacea (reed canarygrass) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland NAG is a palustrine, emergent (PEM) wetland, and is the eastern most wetland within the project boundary on the north side of SR 502. The wetland extends beyond the project boundaries to the northeast and is connected to a larger wetland complex. Multiple buildings surround the wetland and historical disturbance/modification of the wetland is likely.

Soils

The soil sampled in Wetland NAG exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by precipitation, a seasonally shallow water table, and overland flow from adjacent uplands. At the time of field investigation, areas of the wetland were saturated to the surface or inundated, and free water was observed in the soil pit at a depth of 7 inches in NAG-DW1, and a depth of 4 inches in NAG-DW2. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland NAG ranked as a Category III under Ecology's 4-tier rating system (Appendix C). Water Quality Functions were rated higher than Hydrologic Functions and Habitat Functions.
Seasonal ponding from 2 to 3 feet deep, this wetland's depressional nature, and the highly constricted outlet contribute to the performance of Water Quality Functions.
These same physical features, in combination with this wetland's water storage potential in the watershed provide moderate Hydrologic Functions through flood and erosion control.
Habitat Functions were limited due to this site's lack of complexity and special habitat features.

Wetland Summaries (South)

Wetland SA

Wetland SA, looking south

Ecology Rating	II
Clark Co. Rating	II
Cowardin Classification	PFO & PEM
HGM Classification	DEP
WRIA	27

Dominant Vegetation

Juncus effusus (soft rush) FACW
Phalaris arundinacea (reed canarygrass) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SA is a palustrine, forested (PFO) and palustrine, emergent vegetation (PEM) wetland complex located south of SR 502 and west of 22nd Avenue. The wetland is in a headwater position within the watershed and discharges water into wetland NA via a culvert beneath SR 502. Historically Wetlands NA and SA were one wetland complex, but the construction of SR 502 bisected the wetland. At the time of field investigation, the wetland had been partially filled/disturbed by the development and construction of a single-family residence located directly to the west.

Soils

The soil sampled in Wetland SA exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by overland flow from adjacent uplands, precipitation, and a seasonally shallow water table. At the time of field investigation, all areas of the wetland were saturated to the surface or within 12 inches of the soil surface, and free water was observed in the soil pit at a depth of 3 inches. Drainage patterns provided another primary indicator of wetland hydrology. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SA ranked as a Category II under Ecology's 4-tier rating system (Appendix C).
Water Quality Functions scored lower than the scores for Hydrologic Functions and Habitat Functions. Water Quality Functions are limited since the wetland has a culvert for an outlet and lacks seasonally ponded areas.
The area provides significant Hydrologic Functions due to it's headwater position within the watershed and it's ability to store surface water that would otherwise be a source of flooding and erosive flows.
There are numerous habitat features that provide considerable Habitat Functions, including the interspersion of habitat types, varied water regimes, richness of plant species, connectivity to other undisturbed areas, downed large woody debris, thinned stemmed vegetation, and the overall size of the wetland.
Wetland SA and Wetland NA were historically one wetland, but were bisected by the construction of SR 502. The wetlands are not rated as one wetland because a level surface water connection between the two does not exist. The culvert connecting the wetlands appears to have an elevation gradient of greater than 6 inches and water flows in one direction, from south to the north.

Wetland SB

Wetland SB, looking west

Ecology Rating	III
Clark Co. Rating	III
Cowardin Classification	PEM/PFO
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Juncus effusus (soft rush) FACW
Phalaris arundinacea (reed canary grass) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SB is a palustrine, emergent (PEM) and palustrine, forested (PFO) wetland complex located south of SR 502 and west of 22nd Avenue behind an abandoned residence. Species dominating the PFO include *Spirea douglasii* (hardhack), *Rosa nutkana* (Nootka rose), and *Fraxinus latifolia* (Oregon ash). The wetland may have historically covered more area and might have been used as a septic field. The PEM portion of the wetland appears to be infrequently mowed and may be used as a debris/yard waste storage area.

Soils

The soil sampled in Wetland SB exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation, and a seasonally shallow water table. At the time of field investigation, areas of the wetland were saturated to the surface, free water was detected in the soil pit at a depth of 10 inches, and wetland drainage patterns were observed throughout the wetland. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.
Wetland SB is located in back of an abandoned residential property and may have historically been used as a septic field.

Rating/Functions

Wetland SB ranked as a Category III under Ecology's 4-tier rating system (Appendix C).
The ability of the wetland to improve water quality can be attributed to the fact that the wetland occupies a depression with no apparent outlet and is covered by persistent ungrazed vegetation.
Wetland SB has the potential to store surface water that would otherwise be a source of flooding and erosive flows, thereby providing significant Hydrologic Functions.
The interspersion of habitats, structural complexity associated with the different vegetation types, richness of plant species, variety of water regimes, and connectivity to other undisturbed areas provide considerable Habitat Functions.

Wetland SC

Wetland SC, looking north

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation
Carex obnupta (slough sedge) OBL
Juncus effusus (soft rush) FACW
Taraxacum officinale (common dandelion) FACU

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	67%

Description/Vegetation

Wetland SC is a palustrine, emergent (PEM) wetland located south of SR 502 and east of 22nd Avenue. The wetland is in a pasture that extends to the south beyond the project boundaries and appears to be mowed/grazed frequently. The wetland is connected to a roadside ditch, and is located less than 75 feet west of a single family residence

Soils

The soil sampled in Wetland SC exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation, discharge from roadside ditches, and a seasonally shallow water table. At the time of field investigation, areas of the wetland were saturated to the surface, and free water was observed in the soil pit at a depth of 10 inches. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SC ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
The ability of the wetland to improve water quality is very limited, due to the frequent mowing/grazing of the wetland.
Wetland SC is located in a headwater position of the watershed and protects downstream resources from flooding and/or excessive flows, thereby providing significant Hydrologic Functions.
The lack of connectivity to other undisturbed areas and proximity to residential areas and roadways limits the Habitat Functions of the wetland.

Wetland SD

Wetland SD, looking south

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Phalaris arundinacea (reed canarygrass) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SD is a palustrine, emergent (PEM) wetland located south of SR 502 and east of 22nd Avenue. The wetland appears to function as a swale that drains a pasture to the south. There is no longer a surface water connection between Wetland SD and Wetland NC, which were likely one wetland feature prior to the construction of SR 502.

Soils

The soil sampled in Wetland SD exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by overland flow, precipitation, and a seasonally shallow water table. At the time of the field investigation, all areas of the wetland showed saturation within 12 inches of the soil surface, and wetland drainage patterns were observed. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SD ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
The functions provided by this wetland are minimal, limited by the lack of opportunity to improve water quality, the inability to impound water, and the lack of habitat features.

Wetland SE & SF

Wetland SE, looking west

Ecology Rating	III
Clark Co. Rating	III
Cowardin Classification	PEM/PFO
HGM Classification	DEP
WRIA	27

Dominant Vegetation

Wetland SE
Fraxinus latifolia (Oregon ash) FACW
Cornus sericea (redosier dogwood) FACW
Phalaris arundinacea (reed canarygrass) FACW

Wetland SF
Phalaris arundinacea (reed canarygrass) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetlands SE and SF are located south of SR 502 and west and east of 29th Avenue, respectively. Wetland SF is a small topographic depression that is the remnant of a larger wetland complex that was filled during the development of a single-family residential site. Wetland SE is connected to Wetland SF via a culvert under 29th Avenue. Wetland SE is a swale-like, depressional wetland that carries water away from 29th Avenue in an east to west direction. Surface water then flows in one direction, south to north, through a culvert beneath SR 502, providing hydrologic support for Wetlands ND and NE and an associated unnamed tributary. Wetlands SE and SF have palustrine, forested (PFO) and palustrine, emergent wetland (PEM) classes.

Soils

The soils sampled in Wetlands SE and SF exhibited low chroma matrices and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland SF is a small feature that is hydrologically connected to Wetland SE via a culvert beneath 29th Avenue. The wetland is classified as a depressional, semi-permanently flooded/saturated palustrine emergent wetland. All wetland areas were inundated or saturated within 12 inches of the surface on March 21, 2005. Free water was observed 2 inches below the surface in the soil pit at SE-DW1, and at a depth of 12 inches at datapoint SF-DW1. Drainage patterns were noted as another primary indicator of hydrology. These findings suggest there is sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SE & SF ranked as Category III under Ecology's 4-tier rating system (Appendix C).
Water Quality Functions were scored much lower than Hydrologic Functions and Habitat Functions. This is largely due to factors that limit water quality functions such as lack of ponded water, low cover of ungrazed vegetation, and the ditch outlet.
This wetland is considered a headwater wetland, which increases its potential to help reduce flooding and erosion, thereby providing significant Hydrologic Function.
Habitat Functions are moderately supported by the multiple canopy layers, the relatively undisturbed buffers, and the proximity of the wetland complex to other wetlands.

Wetland SJ

Wetland SJ, looking southeast

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	27

Dominant Vegetation

Phalaris arundinacea (reed canary grass) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SJ is a palustrine, emergent (PEM) wetland located south of SR 502, west of 37th Avenue and east of an unnamed driveway. The wetland is small in size and is being used to store abandoned vehicles. The wetland was historically part of Wetland SI, but was bisected by the construction of the driveway. There is no hydrologic connection between Wetlands SI and SJ, so the wetlands were rated separately.

Soils

The soil sampled in Wetland SJ exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation and a seasonally shallow water table. At the time of field investigation, areas of the wetland were saturated to the surface and free water was observed in the soil pit at a depth of 10 inches. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SJ ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
Due to the lack of structural diversity and frequent mowing, the functions of the wetland are minimal.

Wetland SKK, SL, & SLL

Wetland SL, looking west

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	27

Dominant Vegetation

Alopecurus pratensis (meadow foxtail) FACW
Alopecurus geniculatus (water foxtail) OBL
Holcus lanatus (common velvetgrass) FAC

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SL is a linear-shaped topographic depression running parallel to and just south of SR 502. Wetlands SKK and SLL are smaller features to the west and east of Wetland SL respectively. The entire wetland complex begins directly west of 37th Avenue. All of the wetlands have hydrologic connections and are separated by narrow upland burms. All three features are considered palustrine, emergent (PEM) wetlands. Wetlands SL and SLL appear to have been created/altered during the development and landscaping of the church buildings to the south, and appear to be mowed on a regular basis.

Soils

The soils sampled in Wetlands SKK, SL, and SLL exhibited low chroma matrices and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland SL is the largest wetland of the three, and is separated from Wetland SKK by a driveway to the west, and from Wetland SLL by a berm to the east. Wetland SLL is connected hydrologically to Wetland SL by a 6 inch corrugated pipe. Alteration of Wetland SL and SLL's topography in the recent past is apparent, perhaps for ease of grounds maintenance and/or to limit areas of saturation to a restricted area. The contours are symmetrical and have a landscaped appearance. On March 16, March 24, and April 19 of 2005 all wetland areas were inundated or saturated to the soil surface. These findings demonstrate that these wetlands have sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetlands SKK, SL, and SLL rank as Category IV under Ecology's 4-tier rating system (Appendix C).
Scores for Hydrologic Functions, Water Quality Functions, and Habitat Functions were all generally low. The lack of structural and species diversity, lack of the ability to impound water, lack of significant levels of inundation, and the lack of habitat features are all factors contributing to the overall low level of functions provided by these wetlands.

Wetland SN

Wetland SN, looking west

Ecology Rating	III
Clark Co. Rating	III
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	27

Dominant Vegetation

SN-DW1
Poa sp. (bluegrasses)

SN-DW2
Phalaris arundinacea (reed canarygrass) FACW
Alopecurus geniculatus (water foxtail) OBL

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SN is a palustrine, emergent (PEM) Wetland located south of SR 502 and west of 42nd Avenue. The wetland is in a headwater position in the watershed providing hydrological support to Wetland NK (north of SR 502) and an associated unnamed tributary via a culvert passing beneath SR 502. Although Wetlands SN and NK were historically one wetland complex, the construction of SR 502 bisected the wetland, and a level surface water connection no longer exists.
The western part of the wetland represented by SN-DW1, was a mowed lawn dominated by an unidentifiable *Poa* speices. Most of the possible candidates in this genus are FAC or wetter species. Based on this information and the strength of the indicators for the other 2 parameters, it was assumed that more than 50% of the dominant species would normally have an indicator status of OBL, FACW, and/or FAC, thus meeting the hydrophytic vegetation criterion.

Soils

The soils sampled in Wetland SN exhibited low chroma matrices and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, a seasonally shallow water table, roadside ditch discharge, and precipitation. On March 24, 2005 portions of the wetland were inundated or saturated to the soil surface, and wetland drainage patterns were observed. A landowner living directly adjacent to the wetland stated that he observes prolonged periods of inundation in his backyard, the eastern portion of the wetland, every spring. These findings demonstrate that Wetland SN has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SN ranked as a Category III under Ecology's 4-tier rating system (Appendix C).
This wetland, at the western end, is a headwater wetland of a system that has flooding problems, which gave it a higher score for Hydrologic Function. Wetland SN scored relatively low for Water Quality Functions and Habitat Functions due in part to its lack of ungrazed vegetation, lack of complexity, and lack of habitat types and features.

Wetland SO

Wetland SO, looking west

Ecology Rating	III
Clark Co. Rating	III
Cowardin Classification	PFO
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Cornus sericea (red-osier dogwood) FACW
Lonicera involucrata (twinberry) FAC+
Pseudotsuga menziesii (Douglas-fir) FACU
Tolmeia menziesii (youth on age) FAC+

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	75%

Description/Vegetation

Wetland SO is a palustrine, forested (PFO) wetland located south of SR 502 and west of 50th Avenue. The wetland was inundated at the time of field investigation and extended south beyond the project boundaries.

Soils

The soil sampled in Wetland SO exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by overland flow from adjacent uplands, precipitation, and a seasonally shallow water table. At the time of field investigation, areas of the wetland were saturated to the surface and free water was observed in the soil pit at a depth of 2 inches. Wetland drainage patterns were also observed in the wetland, as were areas of inundation up to 14 inches in depth. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SO ranked as a Category III under Ecology's 4-tier rating system (Appendix C).
The ability of the wetland to improve water quality can be attributed to the following facts: the wetland is a depression with no apparent surface outlet, is seasonally inundated over half the total area, and is covered by persistent ungrazed vegetation.
Wetland SO provides limited Hydrologic Function because it is in an isolated landscape position within the watershed, and does not have the opportunity to store water that would otherwise be a source of flooding and erosive flows.
Wetland SO provides significant Habitat Functions due to the various water regimes present, the large downed, woody debris, the large relatively undisturbed buffer, and the connectivity of the wetland to other undisturbed areas.

Wetland SP

Wetland SP, looking north

Ecology Rating	III
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Juncus effusus (soft rush) FACW
Oenanthe sarmentosa (water parsley) OBL
Phalaris arundinacea (reed canary grass) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SP is a palustrine, emergent (PEM) wetland located south of SR 502 and west of 50th Avenue. The area appears to have been created/disturbed through earth moving activities. A large ditch was dug through the middle of the wetland and the soil from the excavation was stockpiled on the east side of the wetland. A large pile of manure was located directly north of the wetland, and appeared to discharge runoff into the wetland.

Soils

The soil sampled in Wetland SP exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation, and a seasonally shallow water table. At the time of field investigation, areas of the wetland were saturated to the surface, inundated to a maximum depth of 12 inches, and free water was observed in the soil pit at a depth of 4 inches. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SP ranked as a Category III under Ecology's 4-tier rating system (Appendix C).
The ability of the wetland to improve water quality can be attributed to the following facts: the wetland has a intermittently flowing outlet, is seasonally inundated over 25% of the total area, and is covered by persistent ungrazed vegetation. The wetland is adjacent to a large manure storage pile, which furnishes the wetland with the opportunity to provide Water Quality Functions.
Wetland SP provides limited Hydrologic Function because it was in an isolated landscape position within the watershed, and does not receive surface water that would otherwise be a source of flooding and erosive flows.
Wetland SP provides significant Habitat Functions due to the various water regimes present, the large relatively undisturbed buffer, and the connectivity of the wetland to other undisturbed areas.

Wetland SQ

Wetland SQ, looking west

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Agrostis capillaris (colonial bentgrass) FAC
Juncus effuses (soft rush) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SQ is a very small palustrine, emergent (PEM) wetland that is located in a pasture south of SR 502 and just west of 50th Avenue. The pasture appeared to be heavily grazed by livestock, mainly goats.

Soils

The soil sampled in Wetland SQ exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation, and a seasonally shallow water table. On March 28, 2005 all areas of the site were saturated to the surface or inundated to a maximum depth of 1 inch. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SQ ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
This wetland is very small and rated very low in each of the broad categories of Water Quality Functions, Hydrological Functions, and Habitat Functions.

Wetland SR

Wetland SR, looking southeast

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation
Agrostis capillaris (colonial bentgrass) FAC
Poa sp. (bluegrass)
Ranunculus repens (creeping buttercup) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	≥67%

Description/Vegetation

Wetland SR was a palustrine, emergent (PEM) wetland that was located south of SR 502 and just west of 50th Avenue. It may serve as grazing area for goats that were occupying an adjacent parcel to the west. Field observations indicated it had been grazed or mowed recently. The wetland was connected to a roadside ditch that provided a hydrologic connection to other wetlands. The *Poa sp.* was unidentifiable at the time of investigation, although most of the possible candidates in this genus are FAC or wetter species.

Soils

The soil sampled in Wetland SR exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation, discharge from roadside ditches during high flow events, and a seasonally shallow water table. At the time of the site visit Wetland SR had less than one inch of inundation with free water standing at the soil surface in the soil pit. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SR ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
This wetland rated relatively low in nearly all respects, however, an important water quality function is likely being provided by this wetland that is down slope from a goat pen. Other functions were limited by the wetlands landscape position, lack of complexity and structure, and its inability to impound water.

Wetland ST

Wetland ST, looking west

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Alopecurus pratensis (Meadow foxtail) FACW
Festuca rubra (red fescue) FAC+
Holcus lanatus (common velvetgrass) FAC
Phalaris arundinacea (reed canary grass) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland ST is a palustrine, emergent (PEM) wetland located south of SR 502 and approximately 1000 feet east of 50th Avenue. The wetland is in a fenced pasture adjacent to a house and was being used by a variety of livestock for grazing. Three pipes entered the fields from the south, and appeared to discharge water into the wetland. The outlet area showed signs of scour/channel marks indicating relatively frequent discharge events. These pipes appeared to be a significant source of hydrology for the wetland.

Soils

The soil sampled in Wetland ST exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by overland flow from adjacent uplands, precipitation, a seasonally shallow water table, and discharge from three, 3-inch pipes that appeared to drain a field south of the wetland. At the time of field investigation, various depths of saturation were observed throughout the wetland, with a maximum depth of 9 inches observed at ST-DW1. Free water was observed in the soil pit at a depth of 13 inches in ST-DW1 and at a depth of 11 inches at ST-DW2. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland ST ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
Due to the small size and lack of structural diversity, the functions of the wetland are minimal and limited largely to water quality improvement.

Wetland SV

Wetland SV, looking south

Ecology Rating	III
Clark Co. Rating	III
Cowardin Classification	PFO
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Carex obnupta (slough sedge) OBL
Fraxinus latifolia (Oregon ash) FACW
Spirea douglasii (hardhack) FACW
Symphoricarpos albus (snowberry) FACU

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	75%

Description/Vegetation

Wetland SV is a palustrine, forested (PFO) wetland located south of SR 502 and west of 72nd Avenue. The wetland was inundated at the time of investigation and appeared to store a significant amount of surface water. The wetland was not connected to the roadside ditch and appeared to be isolated.

Soils

Permission to dig was not granted for the site, although it was assumed that the soils were hydric due to the fact that the area appeared to be inundated and/or saturated for a duration sufficient to promote anaerobic conditions. The strength of the hydrology and vegetation indicators were further evidence the wetland criterion were met, therefore, aiding in the assumption that the hydric soil criteria was satisfied.

Hydrology

Wetland hydrology is provided by overland flow from adjacent uplands, precipitation, and a seasonally shallow water table. At the time of field investigation, water marks on trees were observed, areas of the wetland were saturated to the surface, and inundation to a depth of 12 inches was observed. The area of inundation covered more than ¾ of the wetland and permanent inundation was assumed to occur in a portion of the wetland. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SV ranked as a Category III under Ecology's 4-tier rating system (Appendix C).
The ability of the wetland to improve water quality can be attributed to the following facts: over half of the total area is seasonally inundated and >95% of the area is covered by persistent ungrazed vegetation.
Wetland SV provides Hydrologic Function through the storage of surface water during high precipitation events. Marks of ponding were observed 2 feet from the surface, indicating regular, prolonged durations of surface water storage.
Wetland SV provides significant Habitat Functions due to the various water regimes present, the large relatively undisturbed buffer, and the connectivity of the wetland to other wetland areas.

Wetland SVV

Wetland SVV, looking southeast

Ecology Rating	IV
Clark Co. Rating	III
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Phalaris arundinacea (reed canary grass) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SVV is a palustrine, emergent (PEM) wetland located south of SR 502, west of 72nd Avenue, and directly west of Julie's Restaurant. The wetland is just upslope of Mill Creek and may contribute baseflow to the system. Subsequent visits to the area indicated that personnel from the restaurant frequently mowed the wetland.

Soils

Permission to dig was not granted for site, although it was assumed that the soils were hydric due to the fact that the area appeared to be inundated and/or saturated for a duration sufficient to promote anaerobic conditions.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation and a seasonally shallow water table. At the time of field investigation, areas of the wetland were saturated to the surface and wetland drainage patterns were observed throughout the wetland. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SVV ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
Due to the lack of structural diversity and frequent mowing, the functions of the wetland are minimal.

Wetland SVW

Wetland SVW, looking northeast

Ecology Rating	IV
Clark Co. Rating	III
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Alopecurus pratensis (Meadow foxtail) FACW
Phalaris arundinacea (reed canary grass) FACW
Populus balsamifera (black cottonwood) FAC

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SVW is a palustrine, emergent (PEM) wetland located south of SR 502, west of 72nd Avenue, and directly north Julie's Restaurant. The wetland area is elevated approximately 8 feet above Mill Creek and appeared to contribute minimal base flow to the creek. Subsequent visits to the area indicated that personnel from the restaurant frequently mowed the wetland.

Soils

Permission to dig was not granted for the site, although it was assumed that the soils were hydric due to the fact that the area appeared to be inundated and/or saturated for a duration sufficient to promote anaerobic conditions and the strength of the hydrology and vegetation indicators.

Hydrology

Wetland hydrology is provided by overland flow from adjacent uplands, precipitation and a seasonally shallow water table. At the time of field investigation, areas of the wetland were saturated to the surface. The wetland was situated in a topographical depression, suggesting that frequent saturation and/or inundation occurs following precipitation events. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SVW ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
Due to the lack of structural diversity and frequent mowing, the functions of the wetland are minimal.

Wetland SX

Wetland SX, looking southeast

Ecology Rating	II
Clark Co. Rating	II
Cowardin Classification	PEM/PSS
HGM Classification	DEP
WRIA	28

Dominant Vegetation

SX-DW1 (PSS)
Cornus sericea (red-osier dogwood) FACW
Phalaris arundinacea (reed canary grass) FACW

SX-DW2 (PEM)
Phalaris arundinacea (reed canary grass) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SX is a palustrine, emergent (PEM) and palustrine, scrub-shrub (PSS) wetland complex located south of SR 502, east of 72nd Avenue, and behind First Independent Bank. The wetland extends beyond the project limits to the east and consists of several Cowardin classes, including: palustrine, emergent (PEM); palustrine, forested (PFO); and palustrine, scrub-shrub (PSS).

Soils

The soil sampled in Wetland SX exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation, a seasonally shallow water table, and from overflow of the adjacent pond. At the time of field investigation, areas of the wetland were inundated and/or saturated to the surface. Free water was observed in the soil pit at a depth of 12 inches in SX-DW1 and 10 inches in SX-DW2. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SX ranked as a Category II under Ecology's 4-tier rating system (Appendix C).
The ability of Wetland SX to improve water quality is attributed mainly to the fact that the wetland is a depression with no apparent outlet and has persistent, emergent vegetation for greater than half of the total area.
Wetland SX has considerable floodwater storage capacity due to the fact that no surface outlet was observed, allowing the wetland to store surface water that would otherwise be a source of erosive flows and/or floodwater.
The numerous vegetation classes, variety of water regimes, moderate interspersion of habiatats, relatively undisturbed buffer, and overall size of the wetland provide considerable Habitat Functions.

Wetland SY

Wetland SY, looking south

Ecology Rating	III
Clark Co. Rating	III
Cowardin Classification	PEM
HGM Classification	RIV
WRIA	28

Dominant Vegetation

Alnus rubra (red alder) FAC
Urtica dioica (stinging nettle) FAC+

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SY is a palustrine, emergent (PEM) wetland located along the southern bank of Mill Creek, south of SR 502 and east of 72nd Avenue. The drift lines and water marks observed were evidence that the wetland was seasonally inundated during high flow events of Mill Creek. The wetland was on an approximately 10% slope and was dominated by *U. dioica*. The small size of the wetland limited the functions it provided.

Soils

No soil pit was dug in the wetland due to the dominance of *Urtica dioica* (stinging nettle) and coarse nature of the substrate. The wetland experiences extended durations of inundation and/or saturation due to its proximity to Mill Creek and therefore meets the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, seasonal flood events of Mill Creek, and a shallow water table. At the time of field investigation, areas of the wetland were inundated, drift lines, water marks on trees, and flowing water was observed on the creek side of the wetland. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SY ranked as a Category III under Ecology's 4-tier rating system (Appendix C).
The ability of Wetland SY to improve water quality is due to its proximity to Mill Creek and the presence of persistent, ungrazed vegetation. The dense vegetation has the ability to slow down water velocities and trap sediment.
Wetland SY has considerable floodwater storage capacity due to its proximity to Mill Creek and its dense vegetative covering.
The interspersion of habitats and connectivity to other undisturbed areas, and overall size of the wetland provide considerable Habitat Functions.

Wetland SZ

Wetland SZ, looking south

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Ranunculus repens (creeping buttercup) FACW
Unidentified pasture grass

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	≥50%

Description/Vegetation

Wetland SZ is a small palustrine, emergent (PEM) wetland located south of SR 502 and east of 72nd Avenue in a mowed field. The wetland is located in a topographic depression at the northern edge of a large stand of upland forest.

Soils

The soil sampled in Wetland SZ exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by overland flow, precipitation, and by a seasonally shallow water table. On April 18, 2005 all areas of the site were saturated within 12 inches of the soil surface. At SZ-DW1, free water was observed in the pit at a depth of 12 inches with saturation occurring at 10 inches. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SZ ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
Due to the site's small size, landscape position, and lack of complexity it rated low in the three broad categories of Water Quality Functions, Hydrologic Functions, and Habitat Functions. This wetland may provide some habitat value due to its relatively undisturbed buffer and proximity in relation to an expanse of quality upland habitat.

Wetland SAA

Wetland SAA, looking south

Ecology Rating	III
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Alopecurus geniculatus (water foxtail) OBL
Holcus lanatus (common velvetgrass) FAC

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SAA is a palustrine, emergent (PEM) wetland located south of SR 502 and east of 50th Avenue in a field between two single-family residences. The wetland extends beyond the project boundaries to the south and is part of a larger PEM complex.

Soils

The soil sampled in Wetland SAA exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by overland flow, precipitation, and by a seasonally shallow water table. On April 21, 2005 all areas of the site were inundated or saturated to the surface and wetland drainage patterns were observed throughout the wetland. At SAA-DW1, free water was observed in the pit at the soil surface. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SAA ranked as a Category III under Ecology's 4-tier rating system (Appendix C).
The site's landscape position, dense and ungrazed vegetation, and constricted outlet help trap pollutants and therefore support Water Quality Functions.
The constricted outlet and depressed topography also allows this wetland to provide the Hydrologic Function of retaining water.
Although this wetland does have varied hydroperiods, habitat value is generally limited due to its lack of various vegetative classes, or other special habitat features.

Wetland SAB, NV, & NW

Wetland NW, looking northeast

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	RIV
WRIA	28

Dominant Vegetation

Phalaris arundinacea
(reed canarygrass) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetlands NV, NW, and SAB are small palustrine, emergent wetlands (PEM) located along Mill Creek in the vicinity of where it crosses beneath SR 502, west of 72 Avenue (Dollar Corner). Wetlands NV and NW are just north of SR 502, and Wetland SAB is just south of SR 502. The wetlands were assessed as one wetland complex because they existed within a stretch of Mill Creek that had a constant water regime.

Soils

The soil sampled in Wetlands NV, NW, and SAB exhibited a low chroma matrices and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by seasonal flooding events of Mill Creek, overland flow from adjacent uplands, precipitation, and a shallow water table. At the time of field investigation, drift lines approximately 2 feet above the present stream level were observed throughout the wetland, as were wetland drainage patterns. The soil was saturated within 6 inches of the surface at each datapoint, and various depths of inundation were observed throughout the wetlands. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland NV, NW, and SAB rank as a Category IV under Ecology's 4-tier rating system (Appendix C). Scores for the broad categories of Water Quality Functions, Hydrologic Functions, and Habitat Functions were all relatively low largely due to the wetland's very small size and monotypic invasive vegetation.

Wetland SAD

Wetland SAD, looking west

Ecology Rating	III
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

SAD-DW1
Alopecurus pratensis (meadow foxtail) FACW
Holcus lanatus (common velvetgrass) FAC
Phalaris arundinacea (reed canarygrass) FACW

SAD-DW2
Alopecurus geniculatus (water foxtail) OBL
Anthoxanthum odoratum (sweet vernal grass) FACU
Holcus lanatus (common velvetgrass) FAC

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	83%

Description/Vegetation

Wetland SAD is a palustrine, emergent (PEM) wetland located south of SR 502, behind an abandoned single-family residence, and begins approximately 1700 feet west of 87th Avenue. The wetland extends beyond the project boundaries to the south and was part of a larger PEM complex.

Soils

The soil sampled in Wetland SAD exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by overland flow, precipitation, and by a seasonally shallow water table. On April 21, 2005 all areas of the site were inundated or saturated to the surface. At SAD-DW1, free water was observed in the soil pit at a depth of 6.5 inches. At SAD-DW2, free water was observed at the surface of the soil pit (saturated to the surface). Oxidized root channels associated with living plant material were observed, providing a secondary indicator of wetland hydrology. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SAD ranked as a low Category III under Ecology's 4-tier rating system (Appendix C).
Water Quality and Hydrologic functions are limited in this wetland because it does not impound water and therefore is unlikely to retain pollutants or reduce flooding.
Varied hydroperiods, a relatively undisturbed buffer, and close proximity to other wetlands are characteristics that contribute to Habitat Functions. Habitat value is generally limited in this wetland due to its lack of vegetative structure or other special habitat features.

Wetland SAE

Wetland SAE, looking south

Ecology Rating	III
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Alopecurus pratensis (meadow foxtail) FACW
Lupinus polyphyllus
(bigleaf lupine) FAC+

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SAE is a palustrine, emergent (PEM) wetland that was located south of SR 502 and approximately 1500 feet west of 87th Avenue. The wetland extends beyond the project boundary to the south and was situated within a berm-like structure that was storing surface water. According to the property owner, the berm-like structure is the remnant of a former horse-racing track. A drainage feature was located in the western portion of the berm and appeared to drain excess surface water into wetland SAD.

Soils

The soil sampled in Wetland SAE exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by overland flow, precipitation, and by a seasonally shallow water table. On April 14, 2005 all areas of the site were inundated or saturated to the surface. Free water was observed in the soil pit at a depth of 12 inches and drainage patterns provided another primary indicator of wetland hydrology. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SAE ranked as a Category III under Ecology's 4-tier rating system (Appendix C).
This wetland provides moderate Hydrological and Habitat Functions and minimal Water Quality Functions.
Water Quality Functions are limited by the lack of pollutant sources in the vicinity.
The wetland's constricted outlet and areas of inundation throughout the wetland provide significant Hydrologic Functions by storing surface water that would otherwise be a source of flooding and erosive flows.
Varied hydroperiods and a relatively undisturbed buffer are the only habitat features in a wetland that otherwise provides little Habitat Functions, due to its lack of vegetative complexity, structure, and overall size.

Wetland SAF and SAG

Wetland SAF, looking east

Ecology Rating	III
Clark Co. Rating	III
Cowardin Classification	PFO,PSS, PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Wetland SAF (PSS)
Alopecurus geniculatus (water foxtail) OBL
Holcus lanatus (common velvetgrass) FAC
Rosa nutkana (nutka rose) FAC

Wetland SAG (PEM)
Epilobium ciliatum (FACW-)

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SAF and SAG are located south of SR 502 and east of 72nd Avenue. They contain palustrine, forested (PFO), scrub-shrub (PSS), and emergent (PEM) vegetation classes. The smaller wetland, SAG, is to the east of a driveway that separates the two wetlands, and is located in a deeply incised channel. Water runs east to west through wetland SAG into Wetland SAF though a culvert beneath the driveway. A drainage swale carries water north through Wetland SAF into a ditch on SR 502.

Soils

The soil sampled in Wetlands SAF and SAG exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by overland flow, precipitation, and by a seasonally shallow water table. On April 18, 2005 all areas of the site were saturated to the surface or inundated to a maximum depth of 12 inches. At SAF-DW1, free water was observed in the pit at 12 inches with the soil saturated to 8 inches. At SAG-DW1, free water was observed in the pit at the soil surface. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SAF and SAG ranked as Category III wetlands under Ecology's 4-tier rating system (Appendix C).
These wetlands were rated relatively low for water quality and hydrologic functions. Their landscape position, topography, and unconstricted outlet into a roadside ditch make these wetlands ineffective at impounding water or trapping pollutants. Wetlands SAF and SAG received a somewhat higher rating for habitat functions due to the various hydrologic regimes present, the presence of multiple vegetation classes, their complexity and interspersion of habitats, and their relatively undisturbed buffers.

Wetland SAH

Wetland SAH, looking south

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Alopecurus pratensis (Meadow foxtail) FACW
Holcus lanatus (common velvetgrass) FAC

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SAH is a palustrine, emergent (PEM) wetland located in a pasture south of SR 502 and approximately 700 feet west of 87th Avenue. The property is owned and managed by the Department of Natural Resources and may be harvested for hay. The wetland appeared to be isolated.

Soils

The soil sampled in Wetland SC exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation, and a seasonally shallow water table. At the time of field investigation, areas of the wetland were saturated to the surface, inundated to a depth of 4 inches and free water was observed at the surface of the soil pit. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SAH ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
Due to the small size and lack of structural diversity, the functions of the wetland are minimal and limited largely to water quality improvement.

Wetland SAI

Wetland SAI, looking southwest

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

SAI-DW1
Myosotis laxa (bay forget-me-not) OBL
Ranunculus repens (creeping buttercup) FACW
Rosa pisocarpa (clustered rose) FAC
Rubus ursinus (California blackberry) FACU

SAI-DW2
Anthoxanthum odoratum (sweet vernal grass) FACU

SAI-DW3
Anthoxanthum odoratum (sweet vernal grass) FACU

SAI-DW4
Juncus bufonius (toad rush) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	67%

Description/Vegetation

Wetland SAI is a palustrine, emergent (PEM) wetland located south of SR 502 and east of 87th Avenue. The wetland is in an active hayfield and is regularly harvested. A ditch ran from south to north through the wetland and connected with the roadside ditch on the south side of SR 502. The ditch through the wetland occurred along a fence line, was dominated by shrubs, and can bee see in the picture above. The roadside ditch provided a hydrologic connection between SAI and other wetlands, but the wetlands were rated separately since the wetlands were historically separate units. In some portions of the wetland, the plant community was dominated by annuals that developed during an uncharacteristically dry spring, and were not believed to be an accurate representation of site conditions.

Soils

The soil sampled at each datapoint in Wetland SAI exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by overland flow from adjacent uplands, precipitation, and a seasonally shallow water table. At the time of field investigation, areas of the wetland were inundated or saturated to the surface, with free water observed at various depths in each of the soil pits, with a maximum depth of 14 inches observed at SAI-DW1 and SAI-DW2. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SAI ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
Due to the lack of structural diversity and agricultural land use, the functions of the wetland are minimal and limited largely to water quality improvement.

Wetland SAJ

Wetland SAJ, looking northeast

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Anthoxanthum odoratum (sweet vernal grass) FACU
Holcus lanatus (common velvetgrass) FAC

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	50%

Description/Vegetation

Wetland SAJ is a palustrine, emergent (PEM) wetland located south of SR 502 and east of 87th Avenue. The wetland is in an active hayfield and is regularly harvested. The wetland is connected to a roadside ditch that provided a hydrologic connection to other wetlands, but the wetlands were rated separately since the wetlands were historically separate units. Although the vegetative community was not dominated by hydrophytic species, the strength of the other wetland parameters indicated that wetland conditions were present. The plant community was dominated by annuals that developed during an uncharacteristically dry spring and were not believed to be an accurate representation of site conditions.

Soils

The soil sampled in Wetland SAJ exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation, discharge from roadside ditches during high flow events, and a seasonally shallow water table. At the time of field investigation, areas of the wetland were saturated to the surface, inundated to a depth of 2 inches, and free water was observed in the soil pit at a depth of 4 inches. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SAJ ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
Due to the lack of structural diversity and agricultural land use, the functions of the wetland are minimal and limited largely to water quality improvement.

Wetland SAK

Wetland SAK, looking northeast

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Anthoxanthum odoratum (sweet vernal grass) FACU
Holcus lanatus (common velvetgrass) FAC
Lolium arundinaceum (tall fescue) FAC-

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	33.3%

Description/Vegetation

Wetland SAK is a palustrine, emergent (PEM) wetland that was located south of SR 502 and east of 87th Avenue. The wetland is in an active hayfield and is regularly harvested. The wetland is connected to a roadside ditch that provided a hydrologic connection to other wetlands, but the wetlands were rated separately since the wetlands were historically separate units. Although the wetland vegetation criterion was not technically met for this wetland, the wetland determination is justified by the strength of the soil and hydrology parameters.

Soils

The soil sampled in Wetland SAK exhibited a low chroma (10 YR 4/1) matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation, discharge from roadside ditches during high flow events, and a seasonally shallow water table. For a period in excess of 30 days in April and May 2005, areas of the wetland were saturated to the surface, inundated to a depth of 2 inches, and free water was observed in the soil pit at a depth of 5 inches (May 11, 2005). These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SAK ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
This wetland rated relatively low in nearly all respects, with functions largely limited to a modest water quality function supported by dense herbaceous vegetation. Active agricultural use, small size, landscape position, and lack of habitat features are limiting factors with regard to overall functions provided.

Wetland SAM

Wetland SAM, looking northwest

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Anthoxanthum odoratum (sweet vernal grass) FACU
Holcus lanatus (common velvetgrass) FAC
Phalaris arundinacea (reed canary grass) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	67%

Description/Vegetation

Wetland SAM is a palustrine, emergent (PEM) wetland located south of SR 502 directly east of an unnamed street, and east of 87th Avenue. The wetland extends beyond the property boundaries to the south, is connected to a roadside ditch, and is in a hayfield that is actively harvested.

Soils

The soil sampled in Wetland SAM exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface, and emitted a Sulfidic odor. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by overland flow from adjacent uplands, precipitation, and a seasonally shallow water table. At the time of field investigation, the wetland was saturated to the surface, inundated to a depth of 2 inches, and free water was observed at the surface of the soil pit. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.
A culvert was observed on the eastern border of the wetland, and it appeared to discharge runoff from Wetland SAN during high precipitation events.

Rating

Wetland SAM ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
Due to the lack of structural diversity and agricultural land use, the functions of the wetland are minimal and limited largely to water quality improvement.

Wetland SAN

Wetland SAN, looking east

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Poa pratensis (Kentucky bluegrass) FAC
Ranunculus repens (creeping buttercup) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SAN is a palustrine, emergent (PEM) wetland located south of SR 502, east of an unnamed driveway, and east of 87th Avenue. The wetland is in a maintained residential backyard and is periodically mowed. The area was being used for a debris/yard waste storage area. A drainage swale extended north from the wetland and crossed under the driveway in an approximately 6 inch culvert, and appeared to discharge into wetland SAM.

Soils

The soil sampled in Wetland SAN exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology was provided by overland flow from adjacent uplands, precipitation and a seasonally shallow water table. At the time of field investigation, areas of the wetland were saturated to the surface, inundated to a depth of 4 inches, and free water was observed at the surface of the soil pit. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.
Wetland SAN appeared to drain into Wetland SAM. A ditch extended north from Wetland SAN and connected to a culvert that crossed under a gravel road and discharged into Wetland SAM.

Rating/Functions

Wetland SAN ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
Due to the lack of structural diversity and residential land use (mowed backyard), the functions of the wetland are minimal.

Wetland SAO

Wetland SAO, looking northwest

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Alopecurus pratensis (Meadow foxtail) FACW
Holcus lanatus (common velvetgrass) FAC
Lolium arundinaceum (tall fescue) FAC-

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	67%

Description/Vegetation

Wetland SAO is a palustrine, emergent (PEM) wetland located south of SR 502 and east of 87th Avenue. The wetland was surrounded by single-family residences and may have historically been used as a septic field.

Soils

The soil sampled in wetland SAO exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by overland flow from adjacent uplands, precipitation, discharge from a roadside ditch during periods of high flow, and a seasonally shallow water table. At the time of field investigation, areas of the wetland were saturated to the surface and free water was observed in the soil pit at a depth of 2 inches. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.
The area may have been historically used as a septic field.

Rating/Functions

Wetland SAO ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
Due to the lack of structural diversity, the functions of the wetland are minimal and limited largely to improving water quality.

Wetland SAP

Wetland SAP, looking north

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Alopecurus geniculatus (water foxtail*) OBL*
Alopecurus pratensis (meadow foxtail) FACW
Phalaris arundinacea (reed canarygrass) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

This small isolated palustrine emergent wetland (PEM) is located in a topographic depression south of SR 502 next to a farmhouse. It is the easternmost wetland delineated in the project area south of SR 502.

Soils

The soil sampled in Wetland SAP exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

On May 26, 2005, all areas of the wetland were saturated or inundated to a maximum depth of 2 inches. These findings suggest that this wetland has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SAP ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
Scores for the broad categories of Water Quality Functions, Hydrologic Functions, and Habitat Functions were all relatively low. The wetland provides some water quality functions since it is a densely vegetated topographic depression with no outlet that has a nearby potential source of pollutants (residential and agriculture). Other functions are severely limited by its small size and lack of complexity and structure.

Wetland Summaries (Ditches)

Wetland SWD1

Wetland SWD1, looking west

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	27

Dominant Vegetation

Phalaris arundinacea (reed canarygrass) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SWD1 is a palustrine, emergent (PEM) wetland located south of SR 502, east of 22nd Avenue and west of 29th Avenue in a roadside ditch. The wetland is adjacent to a historical wetland, Wetland SC, and conveys stormwater to other roadside ditches via culverts.

Soils

The soil sampled in Wetland SWD1 exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by overland flow from adjacent uplands, precipitation, roadside ditch discharge, and a seasonally shallow water table. At the time of field investigation, all areas of the wetland were saturated to the surface or within 12 inches of the soil surface, and free water was observed in the soil pit at a depth of 6 inches. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SWD1 ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).

Scores for the broad categories of Water Quality Functions, Hydrologic Functions, and Habitat Functions were all relatively low.

Wetland SWD2

Wetland SWD2, looking west

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	27

Dominant Vegetation

Phalaris arundinacea (reed canarygrass) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SWD2 is a palustrine, emergent (PEM) wetland located south of SR 502 and east of 29th Avenue in a roadside ditch. The wetland is adjacent to a historical wetland, Wetland SL, and conveys stormwater to other roadside ditches via culverts.

Soils

The soil sampled in Wetland SWD2 exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by overland flow from adjacent uplands, precipitation, roadside ditch discharge, and a seasonally shallow water table. At the time of field investigation, all areas of the wetland were saturated to the surface and free water was observed in the soil pit at a depth of 4 inches. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SWD2 ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
Scores for the broad categories of Water Quality Functions, Hydrologic Functions, and Habitat Functions were all relatively low.

Wetland SWD3

Wetland SWD3, looking south

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	27

Dominant Vegetation

Fraxinus latifolia (Oregon ash) FACW
Phalaris arundinacea (reed canarygrass) FACW
Populus balsamifera (black cottonwood) FAC

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SWD3 is a palustrine, emergent (PEM) wetland located south of SR 502 and east of 29th Avenue in a roadside ditch. The wetland is adjacent to a historical wetland, Wetland SL, and conveys stormwater to other roadside ditches via culverts. The establishment of hydrophytic woody vegetation was indicative of a prolonged duration of wetland conditions.

Soils

The soil sampled in Wetland SWD3 exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by overland flow from adjacent uplands, precipitation, roadside ditch discharge, and a seasonally shallow water table. At the time of field investigation, all areas of the wetland were saturated to the surface, areas of inundation up to 6 inches deep were observed, and free water was observed at the surface of the soil. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SWD3 ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
Scores for the broad categories of Water Quality Functions, Hydrologic Functions, and Habitat Functions were all relatively low.

Wetland SWD4

Wetland SWD4, looking west

Ecology Rating	IV
Clark Co. Rating	IV
Cowardin Classification	PEM
HGM Classification	DEP
WRIA	28

Dominant Vegetation

Phalaris arundinacea (reed canary grass) FACW
Spirea douglasii (hardhack) FACW

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-)	100%

Description/Vegetation

Wetland SWD4 is a palustrine, emergent (PEM) wetland located south of SR 502 and east of 87th Avenue in a roadside ditch. The wetland is at the same elevation as adjacent wetlands, and conveys stormwater to other roadside ditches via culverts.

Soils

The soil sampled in Wetland SWD4 exhibited a low chroma matrix and redoximorphic features within 10 inches of the surface. These characteristics are evidence that the soils in the wetland are saturated and/or inundated for a duration sufficient to promote anaerobic conditions, therefore meeting the hydric soil criterion.

Hydrology

Wetland hydrology is provided by overland flow from adjacent uplands, precipitation, roadside ditch discharge, and a seasonally shallow water table. At the time of field investigation, all areas of the wetland were saturated to the surface, areas of inundation up to 4 inches deep were observed, and free water was observed at the surface of the soil. These findings demonstrate the area has sufficient saturation and/or ponding during the growing season to satisfy the wetland hydrology criterion.

Rating/Functions

Wetland SWD4 ranked as a Category IV under Ecology's 4-tier rating system (Appendix C).
Scores for the broad categories of Water Quality Functions, Hydrologic Functions, and Habitat Functions were all relatively low.

RECOMMENDATIONS

Field investigations in the proposed project area reveal that wetland acreage on the north and south sides of the existing SR 502 roadway are relatively equal. However, the north side of SR 502 contains a greater number of high quality wetlands when compared to the south side of SR 502. The north side of SR 502 contains 2 Category I wetlands, 9 Category II wetlands, 13 Category III wetlands, and 9 Category IV wetlands, while the south side of SR 502 contains 1 Category I wetland, 2 Category II wetlands, 15 Category III wetlands, and 23 Category IV wetlands. Consequently, the most effective wetland impact avoidance and minimization strategy may include focusing the proposed roadway widening improvements to the alternate side of the roadway where high category wetlands occur, and by focusing the overall proposed alignment to the south side of SR 502.

Other measures that will help minimize impacts to wetlands and other aquatic resources include the following:

- Use standard erosion control techniques during construction.
- Leave as much native vegetation as possible in the right of way to preserve wildlife habitat and provide a buffer of vegetation.
- Minimize clearing of trees. Unavoidable clearing should be mitigated by planting suitable native trees along nonforested sections of stream banks within or near the project area.
- Bridge piers and/or retaining walls should be placed as far upslope as possible from the wetland or stream channel to minimize impacts.
- Mitigate where existing vegetation can help serve as a buffer or provide connectivity to wildlife habitat.
- Replace highway ditches with new flat-bottom ditches adjacent to the widened highway.
- Avoid impacts to Wetlands NN, NR, and SU to the greatest extent possible; the have the greatest structural and species diversity, and are also an irreplaceable resource.

Should changes to the proposed design and/or alignment occur, a reevaluation will be needed to ascertain whether or not additional wetlands are present.

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