

September XX, 200X

TO: _____

FROM: _____

SUBJECT: **SR XX:** _____

The purpose of this memorandum is to document the investigation of wetland features at the proposed additional wetland mitigation sites for the State Route (SR) XXX Hilltop Road to Skyview Road and Skyview Road to Rabbit Road widening projects in _____ County, Washington. One approximately 40-acre wetland creation and enhancement site lies north of Moose Road and immediately west of the South Fork _____ River. The additional enhancement site lies directly south of Goose Road and east of SR X. These sites are located in Sections X and X of Township XX north, Range X east (Figure 1). WSDOT biologists investigated wetland features at the two sites on August 3 and 21, 200X, respectively. This memo briefly describes the methodology used to investigate the existing conditions and it provides details about the results of the investigation.

Methodology

Areas were assessed for wetland resources using guidelines and methods described in the *Washington State Wetland Identification and Delineation Manual* (Ecology 1997) and the *U.S. Army Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987). In general, the wetland delineation consisted of three main tasks: (1) assessing vegetation, soil, and hydrologic characteristics to identify areas meeting the wetland identification criteria, (2) evaluating constructed drainage features to determine if they would be regulated as wetlands, and (3) marking wetland boundaries. Wetlands bisected by human-made features such as roads were not divided if a level surface water connection between the wetlands existed. If water levels flowed down gradient from one wetland to the next wetland, wetlands were separated (Hruby 2004). Locations of ordinary high water mark (OHWM) were also denoted.

Insert Mitigation Site Vicinity Map

(See [Wetland Mitigation Site Wetland Memo Example 1](#) for example map.)

Figure 1. Vicinity map for the State Route XXX Moose and Goose Road Mitigation Sites, _____ County, Washington.

Biologists used several tools to identify and classify plants and soils examined within the project area. Wetland plant indicator status (WIS) and scientific plant names were identified using the *National List of Plant Species that Occur in Wetlands* (Reed 1988) and *Regional Supplement* (Reed 1993). Biologists referred to the USDA National Plants Database (USDA, NRCS 2006a) to determine and note whether the scientific names of plants have changed since the publication of Reed. Soils characteristics were recorded and classified using the *Field Book for Describing and Sampling Soils* (USDA, NRCS 2002). Hydric soil conditions were assessed using *Field Indicators of Hydric Soils in the United States* (USDA, NRCS 2006b). Routine wetland data forms documenting wetland conditions are included in the memo attachments.

Wetlands were also classified according to the U.S. Fish and Wildlife Service (USFWS) classification system (Cowardin et al. 1979) and rated using the Washington State Department of Ecology four-tier wetland rating system (Hruby 2004) and local wetland ordinances where applicable. The USFWS system (Cowardin et al. 1979) is a descriptive classification, based on physical attributes (i.e., vegetation, soils, and water regime). Washington State Department of Ecology (Ecology) divides wetlands into four hierarchical categories based on specific attributes such as rarity, sensitivity to disturbance, functions, and out ability to replace them. The Ecology categorization incorporates the wetland's hydrologic and geomorphic condition, assigning a hydrogeomorphic classification. The Ecology classification hierarchy ranges from Category I wetlands, which exhibit outstanding features (rare wetland type, relatively undisturbed or a high sensitivity to disturbance, high level of functions) to Category IV wetlands, which have the lowest levels of function and are often heavily disturbed. Ecology rating forms documenting wetland observations were filled out and are included with this memo (see attachments).

Wetlands were also rated according to the _____ County (2005) critical areas ordinance. _____ County employs the Ecology four-tier wetland rating system but has minimum size and function thresholds that must be met before regulating Category IV wetlands. Category IV wetlands less than 0.1 acre in size are exempt if: they do not provide suitable amphibian breeding habitat; do not have unique characteristics; are not located within a habitat conservation area; are not located within a floodplain or designated shoreline of the state; are not part of a mosaic of wetlands and uplands; and are not identified as locally significant. _____ County assigns buffers to protect wetland functions based on wetland category, adjacent land use intensity, and wildlife habitat function for each wetland. _____ County also assigns riparian buffers as follows: Shoreline streams require 150-foot buffers, fish bearing streams require 100-foot buffers, and non-fish bearing streams have 50-foot buffers. Buffers do not extend across roads or other lawfully established structures or hardened surfaces (_____ County 2005).

Wetlands are also assigned a HGM classification to more accurately assess wetland functions. The HGM classification is based on three fundamental factors that influence how wetlands function: position in the landscape (geomorphic setting), water source (hydrology), and the flow and fluctuation of the water once in the wetland (hydrodynamics). Functions and values for wetlands within the project vicinity were classified under hydrogeomorphic method (HGM) and evaluated using the WSDOT *Wetland Functions Characterization Tool for Linear Projects* manual (WSDOT 2000; see attachments). The manual is a qualitative tool designed for linear projects to enable the rapid documentation and characterization of the functions provided by a given wetland. The methodology does not assign quantitative values to a particular function, but identifies functional strengths and weaknesses to help guide management decisions and aid in mitigation choices. Wetland functions are divided into 14 categories.

Flood flow alteration

Sediment removal

Nutrient and toxicant removal

Erosion control and shoreline stabilization

Production of organic matter and its export

General habitat suitability

Habitat for aquatic invertebrates

Habitat for amphibians

Habitat for wetland-associated mammals

Habitat for wetland-associated birds

General fish habitat

Native plant richness

Educational or scientific value

Uniqueness and heritage

The Natural Resource Conservation Service has designated the Goose Road property as Prior Converted Cropland (PCC) (NRCS 2006). Prior Converted Croplands are defined in federal law as wetlands that were drained, dredged, filled, leveled or otherwise manipulated, including the removal of woody vegetation, before December 23, 1985, to enable production of an agricultural commodity, and that: 1) have had an agricultural commodity planted or produced at least once

prior to December 23, 1985; 2) do not have standing water for more than 14 consecutive days during the growing season, and 3) have not since been abandoned for five consecutive years.

Activities in PCCs are not regulated under Swampbuster¹ provisions of the federal farm bill or Section 404 of the Clean Water Act. However, many PCCs are still wetlands, because they meet three criteria in the Washington State Wetland Identification and Delineation Manual (Ecology 1997). Prior converted croplands are not inundated for more than 14 consecutive days and/or are not seasonally flooded or ponded for 15 or more consecutive days during the growing season (ACOE 1990, 2005).

Background Investigation

At the Moose Road mitigation site, National Wetland Inventory (NWI) maps indicate a one small (~ 0.91 acre) palustrine forested seasonally flooded (PFOC) wetland located on the northeast side of the mitigation site (USFWS 1987). A large (~13.5 acre) PFOC wetland is mapped north of the mitigation site and a small (~ 0.28 acre) palustrine unconsolidated bottom (PUBHX) wetland is mapped east of the site just north of Moose Road. Soils on-site are mapped as Briscot silt loam (22), drained; and Puyallup fine sandy loam (124), 0-2% slopes (SCS 1992; Figure 2). The Natural Resource Conservation Service considers Briscot silt loam as hydric (USDA, NRCS 2001). No wetlands are documented on NWI maps on the Goose Road mitigation site, however, the site has been designated PCC. Soils on-site are mapped Puget silt loam (123), drained, 0-2% slopes, which are hydric (SCS 1992; USDA, NRCS 2001; Figure 3). In addition, a visual review of adjacent wetlands/streams within 300 feet of the subject parcels was also conducted and off-site wetlands noted. Wetlands disconnected from the subject parcels via hardened or impervious surfaces (i.e. roads, railroads, etc) are not noted since wetland buffers do not extend across roads or other lawfully established structures or hardened surfaces (_____ County 2005).

No documented bald eagles roosts or nests are located within a mile of the proposed mitigation sites (WDFW 2006a). Salmonid species documented in the South Fork _____ River include Chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), pink (*O. gorbuscha*), sockeye (*O. nerka*), and chum (*O. keta*) salmon, as well as bull trout (*Salvelinus confluentus*), cutthroat (*O. clarki*), and steelhead (*O. mykiss*) trout (WDFW 2006b, WDF 1975). Coho are presumed present in the unnamed stream on the Moose Road site (WDFW 2006a). No documented threatened or endangered plant species are identified on or near the site (WDNR 2006). Impacts to federally listed species and/or critical habitat in the project vicinity were addressed in a separate Biological Assessment as required by the Endangered Species Act for all projects with a federal nexus.

Existing Conditions

Two wetlands and one stream were identified on the Moose Road site and one wetland on the Goose Road site (Figures 2 and 3). At the Moose Road site, one palustrine emergent wetland on the west portion of the site grades into a palustrine forested and scrub-shrub wetland off-site to

¹ The Wetland Conservation provision (Swampbuster) of the 1985 and 1990 farm bills requires all agricultural producers to protect the wetlands on the farms they own or operate if they want to be eligible for USDA farm program benefits. Producers will not be eligible if they plant an agricultural commodity on a converted wetland that was converted by drainage, leveling, or any other means after December 23, 1985, or convert a wetland for the purpose of or to make agricultural commodity production possible after November 28, 1990 (ACOE 2005).

the north. Another isolated palustrine forested and open water wetland is located on the northeast portion of the mitigation site. An unnamed stream (Olsen's Slough) flows north through the mitigation site to the South Fork _____ River. Historically, this channel was connected to the South Fork _____ River as a flow-through channel. Another unnamed tributary (Carrot Creek) flows from the west into the on-site stream. At the Goose Road site, one palustrine emergent wetland encompasses a majority of the site with the only upland consisting of the fill associated with buildings on the northwest corner of the site.

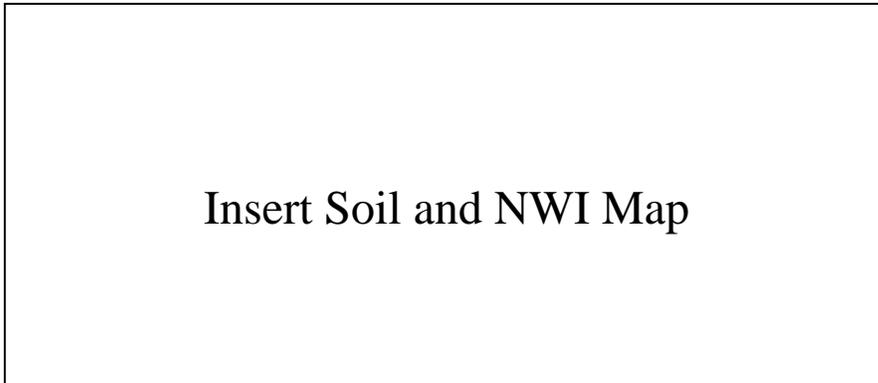


Figure 2. Soil map and NWI map for the SR XXX Moose Road Mitigation Site vicinity.

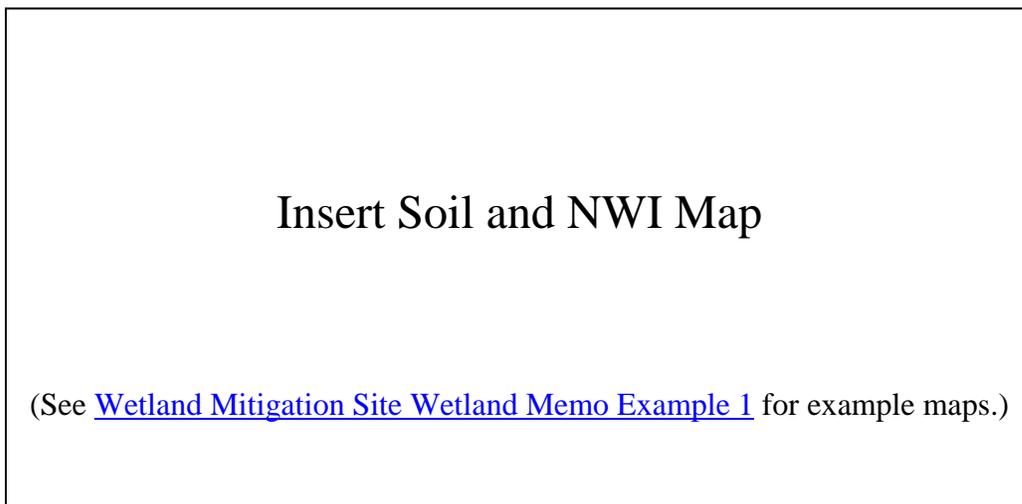


Figure 3. Soil map and NWI map for the SR XXX Goose Road Mitigation Site vicinity

Wetland 1
PFOC/PEME
_____ County III (60 to 100-foot buffer)
Ecology Category III

Wetland 1 located on the Moose Road mitigation site is greater than 13-acre emergent wetland that continues as emergent wetland off-site to the west and off-site to the north as forested and scrub-shrub wetland (Figure 2; Plan sheet 1). Emergent areas are dominated by creeping bentgrass (*Agrostis stolonifera*), water foxtail (*Alopercus geniculatus*), and soft rush (*Juncus effusus*). A large open water pond that appears to have been excavated is located off-site to the west within the emergent wetland area also dominated by reed canarygrass (*Phalaris arundinacea*). Generally, forested and shrub areas off-site contain black cottonwood (*Populus balsamifera*), red alder (*Alnus rubra*), red-osier dogwood (*Cornus sericea*), and willow species. Low chroma soil and the presence of redoximorphic features within 16 inches of the soil surface indicate hydric soils. Soils were a dark gray color (10YR 4/1) with many, medium to coarse, dark brown to very dark brown (7.5YR 3/4 & 7.5YR 2.5/3) redoxymorphic features. Groundwater serves as the primary source of hydrology. At the time of the field investigation in August 2006, soils were dry to 16 inches, however, other indicators of hydrology such as drainage patterns and oxidized rhizospheres were present. In addition, aerial photographs indicate areas of inundation within the emergent wetland (Routine data form #1).

Wetland 1 is a palustrine forested and emergent seasonally saturated/flooded wetland under the Cowardin et al. (1979) classification system. It is a Category III wetland under the Ecology four-tier rating system (Ecology 2004) and a Category III wetland under the _____ County (2005) rating system with a habitat score of 20 points and low to moderate intensity land use; therefore, it has a 60-foot to 100-foot buffer.

Wetland 1 is a depressional wetland with riverine components using the HGM system. The wetland area, based on its location in the landscape, vegetative characteristics, and size, functions at a high level for flood flow alteration, sediment retention and nutrient/toxicant removal, production/export of organic matter due to large size, depressional configuration, complex. Wetland 1 functions at a moderate to high level for erosion control and stabilization, habitat for aquatic invertebrates, amphibian habitat, and general habitat suitability. It functions at a moderate level for wetland-associated mammals/birds and fish habitat due to large wetland size, location along a stream, and presence of more complex habitat (ie forested and open water) off-site. The wetland does not provide native species richness since large emergent areas are dominated by reed canarygrass. Wetland 1 functions at a low level for educational/scientific values since it is privately owned and does not provide uniqueness or heritage since it is not designated a wetland of local significance. Wetland functions and values for Wetland 1 are detailed in the wetland functions and values assessment form provides in the attachments.

Wetland 2
PFOC
_____ **County III (50 to 60-foot buffer)**
Ecology Category III

Wetland 2 is an approximately 0.33-acre forested wetland on the northeast portion of the investigated sites. Overall, the wetland is dominated by forested vegetation such as Pacific willow (*Salix lucida*) and scattered red alder with an emergent understory of reed canarygrass, small-fruited bulrush (*Scirpus microcarpus*), creeping bentgrass, and creeping buttercup (*Ranunculus repens*). Low matrix color and redoximorphic features indicate hydric soils. The soil profile generally consists of a very dark gray (10YR 3/1) loam over a dark gray (10YR 4/1) fine sandy loam with common to many, medium, faint to prominent, dark yellowish brown (10YR 3/6, 10YR 4/6) and black (10YR 2/1) redoximorphic features within the first 14 inches of the sample plot. Groundwater serves as the primary source of hydrology for Wetland 2. At the time of the field investigation, August 2006, the soil was dry to a depth of 14 inches; however, drainage patterns and evidence of seasonal ponding indicate sufficient hydrology during the growing season for the area to be considered wetland (Routine data form #5).

The wetland is a palustrine forested seasonally flooded wetland using the Cowardin et al. (1979) classification system. It is a an Ecology and _____ County Category III wetland with a habitat score of 9 points and low to moderate intensity land use; therefore, it has a 50-foot to 60-foot buffer.

Wetland 2 is characterized as a depressional wetland with no outlet using the HGM system. The wetland area, based on its location in the landscape, vegetative characteristics, and size, functions at a low level for flood flow alteration, sediment retention, nutrient/toxicant removal, habitat for aquatic invertebrates, and habitat for wetland-associated birds due small wetland size, the isolated nature of the wetland, and lack of complex habitat. Wetland 2 functions at a low to moderate and moderate level for general habitat and amphibian habitat due to the presence of some habitat complexity and seasonal ponding. The wetland does not provide erosion control and shoreline stabilization, organic matter production and export, wetland-associated mammal habitat, fish habitat, native plant richness, educational/scientific values, or uniqueness/heritage values since it lacks an outlet, contains reed canarygrass as a dominant, and is not accessible to the public. Wetland functions and values for Wetland 2 are detailed in the wetland functions and values assessment form provides in the attachments.

Wetland 3
PEMB
_____ **County III (80-foot buffer)**
Ecology Category III

Wetland 3 is an approximately 27-acre emergent wetland encompassing a majority of the investigated parcel located south of Goose Road. The site is dominated by emergent vegetation such as creeping bentgrass, water foxtail, with lesser amounts of creeping buttercup, red clover, soft rush, perennial rye, and tall buttercup. Low matrix color and redoximorphic features indicate hydric soils. The soil profile generally consists of a very dark brown (10YR 2/2) silt loam over a gray (10YR 5/1) silty clay loam with common, fine, prominent dark yellowish brown (10YR 4/4) redoximorphic features within the first 12 inches of the sample plot. Soils

were compacted at 12-inches. Groundwater likely serves as the primary source of hydrology for Wetland 3 evidenced by the length of time the ground is saturated, approximately 9 months out of the year. At the time of the field investigation in August 2006, the soil was dry to a depth of 12+ inches; however, drainage patterns indicate sufficient hydrology during the growing season for the area to be considered wetland (Routine data form #7).

The wetland is a palustrine emergent saturated wetland using the Cowardin et al. (1979) classification system. It is an Ecology and _____ County Category III wetland with a habitat score of 7 points and high intensity land use; therefore, it has an 80-foot buffer.

Wetland 3 is characterized as a depressional wetland using the HGM system. The wetland area, based on its location in the landscape, vegetative characteristics, and size, functions at a low level for sediment retention, nutrient/toxicant removal, general habitat suitability, habitat for aquatic invertebrates and amphibians due to the disturbed nature of the wetland and lack of complex habitat. Wetland 3 functions at a moderate level for flood flow alteration and organic matter production/export habitat due to the wetland size, depressional nature of the wetland, and presence of herbaceous vegetation. The wetland does not provide erosion control and shoreline, habitat for wetland associated mammals/birds, fish habitat, native plant richness, educational/scientific values, or uniqueness/heritage values since it is not directly associated with a stream, lacks habitat, contains invasives, and is not accessible to the public. Wetland functions and values for Wetland 3 are detailed in the wetland functions and values assessment form provides in the attachments.

Upland Descriptions

Adjacent uplands surrounding Wetland 1 and 2 are disturbed pasture areas, consisting of planted vegetation and are generally elevated above the wetlands. Upland forested areas are dominated by big-leaf maple (*Acer macrophyllum*), red alder, Himalayan blackberry (*Rubus armeniacus*), scattered red elderberry (*Sambucus racemosa*), snowberry (*Symphoricarpos alba*), and vine maple (*Acer circinatum*). Riparian vegetation along the unnamed stream has been planted, however, invasive Himalayan blackberry has become a dominant along the west stream banks with trace amounts of Japanese knotweed. Native vegetation consists of Pacific ninebark (*Physocarpus capitatus*), red-osier dogwood, scattered salmonberry (*Rubus spectabilis*), black twinberry (*Lonicera involucrate*) in the inner riparian zone (10-15 feet) and small trees consisting of Douglas fir (*Psuedotsuga menziesii*), Sitka spruce (*Picea sitchensis*), and western red cedar (*Thuja plicata*) located in the outer riparian area (15-100 feet). A similar riparian mix is located along the South Fork _____ River. Upland to Wetland 3 is associated with fill for farm buildings and a residence. Dominant herbaceous vegetation generally consists of orchard grass (*Dactylis glomerata*), perennial rye (*Lolium perenne*), purple clover (*Trifolium pretense*), creeping bentgrass (*Agrostis stolonifera*), dandelion (*Taraxacum officinale*), and Canadian thistle (*Cirsium arvense*). Soils may be relic hydric soils and were a black to dark gray to very dark gray brown, or very dark grayish brown silt loam with oxidized rhizospheres. No evidence of hydrology was present. Dry soils lacking primary and multiple secondary hydrology indicators, and a predominance of upland vegetation are evidence that these areas do not meet wetland criteria (Routine data forms #2, 3, 4, 6, 8).

Impacts

WSDOT is proposes to create approximately 10+ acres of palustrine scrub-shrub and forested wetland at the Moose Road mitigation site wetland by excavation down to ground water level and planting hydrophytic vegetation. Wetland/riparian buffer and additional wetland enhancement will also occur on this site. At the Goose Road mitigation site WSDOT proposes to enhance approximately 19 acres of disturbed emergent by planting with native shrub and tree wetland vegetation. Details of the proposed wetland creation and temporary disturbance associated with proposed grading and planting plans will be included in a conceptual wetland mitigation plan developed for the sites.

Please call me at (XXX) XXX-XXXX if you have any questions regarding these findings.

XXX (*initials*)

encls: Routine Wetland Data Forms
 Wetland Rating Forms
 Wetland Function Forms
 Wetland Plan Sheets

REFERENCES

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- ACOE. 1990. Regulatory Guidance Letter 90-07. Clarification of the Phrase Normal Circumstances as it Pertains to Cropped Wetlands. Website accessed November 16, 2005 at: <http://www.usace.army.mil/inet/functions/cw/cecwo/reg/rgls/rgl90-07.htm>
- ACOE. 2005. Wetlands and Agriculture: Section 404 of the Cleanwater Act and Swampbuster in the Food Security Act. Army Corps of Engineers. Website accessed on November 16, 2005 at: http://www.mvm.usace.army.mil/regulatory/regulations/clean_water.htm
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. Publication #FWS/OBS-79/31. U.S. Department of the Interior, Fish and Wildlife Service, Office of Biological Services, Washington, D.C.
- Ecology. 1997. Washington state wetland identification and delineation manual. Ecology Publication #96-94. Washington State Department of Ecology, Olympia, Washington.
- Hruby, Thomas. 2004. Washington State wetland rating system for western Washington – revised. Washington State Department of Ecology Publication #04-06-025. August 2004.
- Reed, P.B. Jr. 1988. National list of plant species that occur in wetlands: Washington. Biological Report 88(26.9) for National Wetlands Inventory, Washington, D.C.
- Reed, P.B. Jr. 1993. Northwest supplement (Region 9) species with a change in indicator status or added to the Northwest 1988 list, wetland plants of the state of Washington 1988. Biological Report 88 (26.9), for National Wetlands Inventory, Washington, D.C.
- Environmental Laboratory. 1987. Corps of Engineers wetland delineation manual. Technical Report Y-87-1, Environmental Laboratory, Department of the Army, Waterways Experiment Station, Vicksburg, Mississippi.

- NRCS. 2006. Natural Resources Conservation District Prior Converted Cropland (PCC) Maps- _____ County.
- SCS. 1992. Soil survey of _____ County Area, Washington. U.S. Department of Agriculture, Natural Resource Conservation Service. 481 pp.
- USDA, NRCS. 2001. Hydric soils of the United States: _____ County. U.S. Department of Agriculture, Natural Resource Conservation Service in cooperation with the National Technical Committee for Hydric Soils. Available online at http://www.wa.nrcs.usda.gov/technical/soils/county_hydric_lists.html. Accessed July 2006.
- USDA, NRCS. 2002. Field book for describing and sampling soils, version 2.0. United States Department of Agriculture, Natural Resource Conservation Service, National Soil Survey Center. September 2002. Washington, D.C.
- USDA, NRCS. 2006a. The PLANTS database. U.S. Department of Agriculture, Natural Resource Conservation Service, National Plant Data Center, Baton Rouge, LA. Updated June 5, 2006. Available online at: <http://plants.usda.gov/>. Accessed September 19, 2006.
- USDA, NRCS. 2006b. Field indicators of hydric soils in the United States guide for identifying and delineating hydric soils, version 6.01. United States Department of Agriculture, Natural Resource Conservation Service, in cooperation with the National Technical Committee for Hydric Soils. Washington, D.C.
- USFWS. 1987. U.S. Fish and Wildlife Service, Ecological Services Division. National wetland inventory maps database. Accessed through WSDOT GIS August 2006.
- WDF. 1975. Washington Department of Fisheries. A Catalog of Washington Streams and Salmon Utilization. Water Resource Inventory Area 01: _____ River Basin.
- WDFW. 2006a. Washington Department of Fish and Wildlife. Priority Habitats and Species Database. Habitats and Species Report for T38N, R5E, Section 7. Accessed through WSDOT GIS August 10, 2006.
- WDFW. 2006b. Washington Department of Fish and Wildlife. Salmonscape database: <http://wdfw.wa.gov/mapping/salmonscape/index.html>. Accessed August 10, 2006.
- WDNR. 2006. Washington State Department of Natural Resources. Natural Heritage Database T38N, R5E, Section 7, W.M. Accessed through WSDOT GIS database in August 10, 2006.
- _____ County. 2005. _____ County Critical Areas Ordinance. Title 16. Chapter 16.16. Article 6 Wetlands. Website accessed on November 10, 2005 online at: http://www.co._____.wa.us/pds/shorelines_critical_areas/cao_current.jsp.
- WSDOT. 2000. Wetland functions characterization tool for linear projects. Washington State Department of Transportation, Environmental Affairs Office, Olympia, WA.