I-405, Tukwila to Renton Improvement Project (I-5 to SR 169 – Phase 2)

INTERSTATE 405 Corridor Program

Congestion Relief & Bus Rapid Transit Projects

ECOSYSTEMS DISCIPLINE REPORT

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Washington State Department of Transportation

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SUMMARY

The Washington State Department of Transportation (WSDOT) is proposing to construct the I-405, Tukwila to Renton Improvement Project (I-5 to SR 169, Phase 2), referred to as the Tukwila to Renton Project, to relieve congestion. The Tukwila to Renton Project extends approximately 4 miles along I-405, from I-5 to SR 169, and approximately 2 miles along SR 167, from I-405 to SW 43rd Street.

Study Approach

Biologists gathered existing information for the study area through literature and internet research; interviews with local, state, and federal agency personnel; and previously prepared WSDOT reports. Additional information on the ecosystem elements in the study area was gathered by conducting wetland delineations and stream surveys, and field verifying wildlife habitat data. The collected information was then compared to the project footprint, including all roadway and drainage improvements, to assess potential effects resulting from the project.

Baseline Conditions

Baseline ecosystem conditions in the study area are typically degraded. Rivers and streams in the study area have been channelized, diked, and straightened to accommodate development. All of the wetlands in the study area have been affected by human influence to some extent. Stream, river, and wetland buffer sizes are limited by their proximity to elements of the built environment and typically consist of immature trees, shrubs, or grasses intermixed with non-native invasive plant species. Wildlife habitats are fragmented throughout the study area and much of the baseline wildlife habitat is located in areas where vegetation is regularly maintained, which limits its productivity.

Project Effects

The project results in temporary and permanent effects to wetlands, aquatic resources, and wildlife habitat. The project fills or places structures in some wetlands, streams, and rivers. The project adds approximately 58 net acres of additional

impervious surfaces to the study area. A summary of these effects is detailed in Exhibit S-1.

Exhibit S-1: Summary of Ecosystem Element Effects

Ecosystem Element	Temporary Effects*	Permanent Effects*
Wetlands (acres)	1.1	7.5
Wetland buffers (acres)	0.5	8.1
Aquatic resources below ordinary high water mark (streams and rivers) (square feet)	64,000	73,500
Aquatic resources from shading (streams and rivers) (square feet)	4,000	37,500
Aquatic resources buffers (square feet)	46,000	318,000
Wildlife habitat (acres)	73.3	34.0

* All temporary and permanent effects in this summary table have been rounded up to either the nearest tenth of an acre or the nearest 500 square feet.

Measures to Avoid or Minimize Effects

The Tukwila to Renton Project was designed to avoid effects to ecosystem elements to the greatest extent practicable. Approaches such as locating project features away from ecosystem elements or installing retaining walls were incorporated throughout the design of the project. During construction, WSDOT will require that appropriate best management practices and conservation measures are implemented to reduce potential effects to ecosystem elements. Mitigation activities to offset project effects will be performed in accordance with applicable local, state, and federal regulations that govern the ecosystem elements detailed in this discipline report.

Unavoidable Adverse Effects

Mitigation for the project provides a means to off-set project effects and potentially improve the overall condition of the ecosystem elements in the study area. After minimizing and avoiding effects to ecosystem elements to the maximum extent practicable, compensatory mitigation will be implemented to offset the remaining adverse effects from the project to the ecosystem elements.

ACRONYMS AND ABBREVIATIONS

Term	Meaning
BMP	best management practice
BRPS	Black River Pump Station
CAD	computer-aided design
CAO	critical areas ordinance
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DO	dissolved oxygen
DPS	distinct population segment
Ecology	Washington State Department of Ecology
EIS	Environmental Impact Statement
ESA	Endangered Species Act
ESU	evolutionarily significant unit
GIS	geographic information system
GMA	Growth Management Act
HHD	Howard Hansen Dam
HOV	high-occupancy vehicle
HRM	Highway Runoff Manual
IDT	interdisciplinary team
LWD	large woody debris
MP	milepost
NB	Northbound
NHP	Natural Heritage Program
NMFS	National Marine Fisheries Service
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OHWM	ordinary high water mark
PAB	palustrine aquatic bed
PCE	primary constituent element
PCWRP	Panther Creek Watershed Rehabilitation Plan
PEM	palustrine emergent

Term	Meaning
PFO	palustrine forested
PHS	Priority Habitats and Species
PSS	palustrine scrub-shrub
RCW	Revised Code of Washington
RM	river mile
ROD	Record of Decision
SMA	Washington State Shoreline Management Act
SB	Southbound
SPCC	Spill Prevention, Control, and Countermeasures
TPA	Transportation Partnership Account
USFWS	U.S. Fish and Wildlife Service
WAC	Washington Administrative Code
WDFW	Washington State Department of Fish and Wildlife
WDNR	Washington State Department of Natural Resources
WRIA	Water Resource Inventory Area
WSDOT	Washington State Department of Transportation

GLOSSARY

Term	Meaning
amphibians	A group of vertebrate animals that spend part of their time on land and part in the water. Amphibians must return to the water to breed and they have distinct larval and adult forms.
anadromous fish	A fish species that spends a part of its life cycle in the sea and returns to freshwater streams to reproduce (for example, salmon, steelhead, and trout).
bank	The slope of land adjoining a body of water, such as a river, lake, wetland, or drainage channel. With respect to flowing waters, banks are either right or left as viewed facing in the direction of the flow.
bankfull channel	The stream channel formed by the dominant discharge, also referred to as the active channel, which meanders across the floodplain.
bankfull width	The width of the stream channel between the tops of the stream banks where, under high flow conditions, the water level would be even with the top of the banks. In a river with a floodplain, this is the point just before water would spill over onto the floodplain.
base flow	The volume of flow in a stream or river during dry conditions, as opposed to conditions influenced by storm runoff. Base flows discharge groundwater and water from upstream channels, wetlands, lakes, and ponds.
basin	An area of land that drains to a specific waterbody.
best management practice (BMP)	Innovative and improved environmental protection tools, practices, and methods that have been determined to be the most effective, practical means of avoiding or reducing environmental effects.
buffer (aquatic resource)	A designated area along and adjacent to a stream or wetland that may be regulated to control the negative effects of adjacent development on the aquatic resource.
channelization (streams)	Structural alteration made to straighten, widen, deepen, or otherwise modify a natural stream channel.
cofferdam	A temporary watertight enclosure constructed around a worksite in a reservoir or on a stream, enabling the worksite to be pumped dry or the water level controlled so that construction can proceed in the dry.
confluence	The convergence of two streams of comparable size into a single channel, or the junction where two rivers, streams, etc. flow together.

Term	Meaning
construction footprint	The physical area affected by project construction activities.
corridor	Within the context of a visual analysis, the road or highway and the adjacent area that is visible from and extending along the highway. The distance the corridor extends out from the highway may vary depending on different factors, such as land use and topography, or the corridor may be defined as a set width, such as 1/4 or 1/2 mile.
critical areas	These include aquifer recharge areas, fish and wildlife habitat conservation areas, flood hazard areas, geologic hazard areas, and wetlands. Critical area functions and values are protected by ordinances that require development to avoid or compensate for adverse effects on critical areas.
critical habitat	Under the Endangered Species Act: (1) the specific areas within the geographic area occupied by a federally-listed species on which are found physical or biological features essential to conserving the species, and that may require special protection or management considerations; and (2) specific areas outside the geographic area occupied by a federally-listed species when it is determined that such areas are essential for the conservation of the species.
culvert	A pipe or box structure that drains open channels, swales, or ditches under a roadway or embankment.
deciduous	Trees that shed their leaves annually.
delineation	Establishing the boundaries of a wetland by applying adopted jurisdictional methods.
direct effect	An effect caused by an action or alternative and occurring at the same time and location. Effects may be ecological, aesthetic, historic, cultural, economic, social, or health-related.
direct-access ramp	A ramp that provides direct access to and from high-occupancy vehicle lanes for buses, carpools, and vanpools. This avoids the need to cross several lanes of general-purpose traffic, saving time and improving traffic flow and safety.
dominant species	A plant species that exerts a controlling influence on or defines the character of a vegetative community.
down-gradient	The direction of flow; i.e., downstream.
downstream	Referring to the direction of the flow of a stream or river.

Term	Meaning
drainage ditch	An open channel designed and constructed to convey water. This may include modifications of natural drainages or man-made historic channels incorporated in a system design.
ecosystem	A community of organisms interacting with each other, and the environment in which they live.
effect	Something brought about by a cause or agent; a result. This may include ecological, aesthetic, historic, cultural, economic, social, health, or other effects, whether direct, indirect, or cumulative. Effects include those resulting from actions that may have both beneficial and detrimental effects.
electrofishing	A fish sampling method that involves capturing fish using an electric shock technique.
emergent wetlands	Wetlands comprised of plants that are rooted in shallow water or saturated soil but have foliage that extends out of the water or above the ground surface.
encroachment	Any action, including the placement of fill and the construction of piers and bridge abutments, that will occur within the limits of the regulatory floodplain; intrusion by roads or development into habitat areas that reduces the area available to wildlife or reduces the functions of the habitat area.
endangered species	Any species that is in danger of extinction throughout all or a substantial portion of its range.
Endangered Species Act (ESA)	Federal legislation adopted to prevent the extinction of plants and animals.
erosion	The wearing away of soil or rock by the action of running water, wind, ice, or geologic agents. For this analysis, erosion relates primarily to stormwater runoff.
escapement	The number of adult fish that enter a fresh water system to spawn.
Evolutionarily Significant Unit (ESU)	The term used by the National Marine Fisheries Service for a fish species population protected by a listing under the Endangered Species Act.
federally-listed species	Any species of fish, wildlife, or plant that has been determined by the U.S. Fish and Wildlife Service or National Marine Fisheries Service to be endangered or threatened under Section 4 of the Endangered Species Act.
fill	Any material placed in an area to increase surface elevation.

Term	Meaning
filter fabric fence	Cloth fencing installed around a construction site to keep soil from migrating off the site.
filter strip	Grassy slopes that filter and diffuse stormwater running off highway shoulders.
flap gate	An opening through which water may flow freely at low water elevations, but which closes automatically and prevents water from flowing in the opposite direction at higher water elevations.
flood	An overflow or inundation that comes from a river, stream, tide, wave action, storm drain, or excess rainfall; any relatively high streamflow overtopping the natural or artificial banks in any reach of a stream.
forbs	Broad-leaved flowering plants.
forested wetland	A wetland characterized by woody vegetation that is 20 feet tall or taller.
general-purpose lane	A freeway or arterial lane available for use by all traffic.
geographic information system (GIS)	A digital computer mapping system that can overlay a wide variety of data such as land use, utilities, and vegetative cover, and provide a spatial analysis.
gradient	The rate at which a physical quantity, such as temperature or pressure, changes relative to change in a given variable, especially distance.
groundwater	That portion of the water below the ground surface that is free flowing within the soil particles. Groundwater typically moves slowly, generally at a downward angle because of gravity, and eventually enters into streams, lakes, and oceans.
groundwater recharge	The process where natural sources (infiltrating rain, snowmelt, or surface water) or pumped water enters and replenishes the ground water supply.
Growth Management Act (GMA)	Washington State legislation adopted in 1990, and subsequently amended, that requires all cities and counties in the state to conduct long-range comprehensive planning, and has more extensive requirements for the largest and fastest-growing counties and cities in the state. Such comprehensive plans must address several required topics, including but not limited to land use, transportation, capital facilities, utilities, housing, etc. The GMA requirements also include guaranteeing the consistency of transportation and capital facilities plans with land use plans.
grub	An action where roots or stumps are cleared by digging.

Term	Meaning
habitat	The environment or specific surroundings where a plant or animal grows or lives.
habitat fragmentation	The separation of a habitat into pieces that are no longer physically connected to each other as a result of human development.
hazardous materials	Any material that may pose a threat to human health or the environment because of its quantity, concentration, or physical or chemical characteristics.
herbaceous	A plant with no persistent woody stem above the ground.
high-occupancy vehicle (HOV)	High-occupancy vehicle is a special designation for a bus, carpool, or vanpool provided as an encouragement to increase ride-sharing. Specially designated HOV lanes and parking are among the incentives for persons to pool trips, use fewer vehicles, and make the transportation system more efficient. HOV lanes on I-405 are generally inside (left-side) lanes, and are identified by signs and a diamond on the pavement. Currently, two or more (2+) occupants are required to use the I-405 HOV lanes. Motorcycles are allowed to use freeway HOV lanes as well.
hydric soil	Soils formed under conditions of saturation, flooding, or ponding long enough to develop anaerobic conditions (absence of oxygen) in the upper part.
hydrologically connected	Linked to or associated with the water source of another system either through surface water, a stream, groundwater, etc.
hydrology	Within the context of a wetland, permanent or periodic inundation or prolonged soil saturation sufficient to create anaerobic conditions in the soil.
hydroseed	A mixture of grass seed, fertilizer, lime, and wood fiber mulch designed to rapidly revegetate cleared areas.
impervious surface	Pavement, roofs, and other compacted or hardened areas that do not allow the passage of rainfall or runoff into the ground.
incised	A term used to describe down-cutting (downward erosion) by a stream. Incision deepens and often steepens the stream channel.
indirect effect	An effect that occurs later in time or is removed in distance from the proposed action, but is still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air, water, and other natural systems.

Term	Meaning
infiltration	The passage of water through the soil surface into the subsoil.
invasive species	Non-native species that disrupt and displace native species.
jurisdiction	A municipal government agency, such as a city or county, and as appropriate, federal and state agencies and federally recognized tribes. The term also can mean "to have authority over."
land use	The type of activity (i.e., residential, commercial, or industrial) that occurs on property.
large woody debris (LWD)	Logs, limbs, or root wads that are waterward of the ordinary high water line. To qualify as large woody debris, it must be of sufficient size to be resistant to erosion, provide bank stability, or help maintain or create habitat features important to fish life.
levee	A manmade structure, usually an earthen embankment along the edge of a river channel, constructed to contain, control, or divert the flow of water so as to provide protection from temporary flooding.
macroinvertebrate	Small animals that are visible with the naked eye, yet have no backbone (insects, worms, larvae, etc.).
meandering	Following a winding and turning course.
minimization	Taking measures to reduce potential effects to the smallest practical amount, extent, size, or degree. Minimization could include alignment shifts, a commitment to seasonal construction windows, replacement of land or facilities, restoration or landscaping, or payment of fair market value for affected lands.
mitigation	An effort to: (1) avoid the effect altogether by not taking a certain action or parts of an action; (2) minimize the effect by limiting the magnitude of the action and its implementation, by using technology or by taking affirmative steps; (3) rectify the effect by repairing, rehabilitating, or restoring the affected environment; (4) reduce or eliminate the effect over time by preservation and maintenance operations; (5) compensate for the effect by replacing, enhancing, or providing substitute resources or environments; and/or (6) monitor the effect and take appropriate corrective measures.

Term	Meaning
mitigation bank	A mitigation project constructed in advance of planned development to mitigate for unavoidable effects on wetlands and their associated habitat. Banks are generally sized to provide sufficient mitigation for several development projects in one location. As a result, the bank typically provides higher functioning wetlands and more useable habitat than may be possible on an individual project scale.
obligate (OBL)	Vegetative species that almost always occur in wetlands under natural conditions (estimated probability greater than 99 percent).
ordinary high water mark (OHWM)	The elevation marking the highest water level, which is so common and maintained for a sufficient time in all ordinary years that it leaves evidence upon the landscape, such as a clear, natural line impressed on the bank, changes in soil character, destruction of or change in vegetation, or the presence of litter and debris. Generally, it is the point where the natural vegetation changes from predominately aquatic to upland species. Where the ordinary high water mark cannot be found, it is the line of mean annual flood – the highest the water gets in an average year, but not the highest it gets during extreme flooding.
palustrine	Tidal or non-tidal freshwater areas dominated by trees, shrubs, persistent emergents, mosses, or lichens. Palustrine also includes wetlands lacking this vegetation but having the following characteristics: area less than 20 acres, no active wave-formed or bedrock shoreline, and water depth in the deepest part is less than 6.6 feet at low water.
palustrine aquatic bed (PAB)	Surface waters dominated by plants that grow and form a continuous cover principally on or at the surface, including algal mats, detached floating mats, and rooted vascular plant assemblages. Total vegetation cover is greater than 80 percent.
palustrine emergent (PEM)	A wetland characterized by erect, rooted, non-woody plants such as cattails, rushes, and sedges.
palustrine forested (PFO)	A wetland characterized by woody vegetation that is 20 feet tall or taller.
palustrine scrub-shrub (PSS)	Areas dominated by woody vegetation less than 20 feet tall, such as trees, shrubs, or young trees that are stunted due to environmental conditions.
peak flow	The maximum instantaneous rate of flow during a storm, usually in reference to a specific design storm event.

Term	Meaning
pier	A vertical column or substructure unit that supports an elevated structure such as a bridge.
piscivorous animal	Animals that rely solely on fish as a food source.
pollutant	Any substance introduced into the environment that contaminates or otherwise adversely affects the usefulness of a resource.
primary constituent elements	Physical and/or biological habitat features needed for the survival and successful reproduction of a species.
priority habitats	Habitat types with unique or significant value to a diverse group of species.
pump station	A mechanical facility that controls flows from one body of water to another.
raptor	A raptor is a carnivorous (meat-eating) bird. All raptors share at least three main characteristics: keen eyesight, eight sharp talons, and a hooked beak. Eagles, hawks, falcons, and owls are all considered raptors.
reconnaissance-level field survey	A qualitative investigation, where the biologist walks the site, photographs key areas, and makes observations of plants and wildlife, to assess overall site conditions.
refugia habitat	An area of a stream that provides shelter or safety for aquatic species.
resident fish	Fish that do not migrate out to the ocean but remain in fresh water.
restoration	To improve a disturbed or altered wetland by returning wetland parameters that may be missing.
retaining wall	A structure used to hold earth in place where the natural grade cannot be maintained.
retention/detention pond	A stormwater facility designed to reduce stormwater runoff quantity and quality effects by storing the increased runoff volume that results from development, allowing the suspended particles to settle out, and then slowly releasing it at a controlled runoff rate.
revetments	Revetments are facings of stone, concrete, or even such materials as tires, placed on a riverbank or levee to protect from erosion.
riffle	A shallow area of a stream or river in which water flows rapidly over a rocky or gravelly stream bed.

Term	Meaning
right-of-way	Land purchased prior to the construction of transportation improvements along with land for sound walls, retaining walls, stormwater facilities, and other project features. This also includes permanent or temporary easements for construction and maintenance. Vacant land may also be set aside for future highway expansion under certain circumstances.
riparian	Pertaining to anything connected with or immediately adjacent to the banks of a stream, river, or other waterbody.
riparian area	The land and habitat adjacent to streams, lakes, estuaries, or other waterways, comprising the transition area between the aquatic ecosystem and the nearby upland terrestrial ecosystem. Riparian corridors, or zones, identified by soil characteristics or plant communities, include the wet areas in and near streams, ponds, lakes, springs, and other surface waters.
riprap	A manmade armoring, facing layer, or protective mound of rocks placed to prevent erosion or sloughing of a stream bank or structure due to flow of surface and stormwater runoff.
river mile (RM)	The distance of a point on a river measured in miles from the river's mouth along the low-water channel.
riverine	Freshwater areas that are contained within a channel and are not dominated by trees, shrubs, and persistent emergents; for example, rivers and streams.
runoff	Rainwater or snowmelt that leaves an area as surface drainage.
salmonid	Any member of the family Salmonidae, which includes all species of salmon, trout, and char (including bull trout).
saturated soil conditions	A condition in which all easily drained voids (pores between soil particles) in the root zone are filled with water to the soil surface.
scrub-shrub wetland	Wetland dominated by woody vegetation less than 20 feet tall. The vegetation may include shrubs, young trees, and trees or shrubs that may be stunted because of environmental conditions. Scrub-shrub wetlands are flooded for extended periods during the growing season.
sediment	Material that originates from weathering and erosion of rocks, dirt, or unconsolidated deposits and organic material. Sediment is carried and deposited by wind, ice, or water. It is often transported by stormwater runoff and may be suspended within the water.

Term	Meaning
seep	A spot where water trickles out of the ground to form a pool or wet area.
sensitive species	Any native wildlife species that is vulnerable or declining and is likely to become endangered or threatened throughout a significant portion of its range without cooperative management or removal of threats.
sheet flow	Runoff that flows over the ground surface as a thin, even layer as opposed to a concentrated stream or channel.
Shoreline Management Act (SMA)	Washington State legislation adopted in 1971 that requires local jurisdictions to create and implement a Shoreline Master Program (SMP). The purpose of the SMP is to regulate land use and new development within sensitive shoreline areas. Shorelines, according to the SMA, include all areas typically within 200 feet inland from principal bodies of water (rivers and streams with flows of at least 20 cubic feet per second, lakes over 20 acres, and tidal areas) and associated wetlands. The local SMP identifies standards of protection for shoreline areas, and typically contains shoreline policies, shoreline use environments or zones, and specific shoreline regulations. The final SMP is subject to approval by the Washington State Department of Ecology.
Shoreline Master Program	See: Shoreline Management Act.
side channel	A secondary stream that splits off and then rejoins the main channel.
slope	The change in elevation over a distance, or an inclined land form.
species of concern	Species whose conservation standing is of concern to the U.S. Fish and Wildlife Service, but for which status information is still needed for consideration to list the species under the Endangered Species Act.
Spill Prevention Control and Countermeasures (SPCC) Plan	A plan for minimizing effects to soil, surface water, and groundwater in the event of a spill of contaminated soil, petroleum products, contaminated water, or other hazardous substances. The SPCC plan addresses construction procedures, equipment, and materials.
staging area	Locations used during construction to provide room for employee parking, large equipment storage, and material stockpiles.
State-listed species	Species of wildlife that are considered to be at-risk and are protected by Washington State laws.

Term	Meaning
stormwater	The portion of precipitation that does not naturally percolate into the ground or evaporate, but flows overland, in channels, or in pipes into a defined surface water channel or a constructed stormwater facility.
stormwater detention	The process of storing stormwater in manmade facilities such as ponds or vaults and releasing the stormwater at a controlled rate. This helps control volume and rate at which stormwater enters streams and rivers. Controlling the flow of stormwater helps maintain or improve conditions in the streams and minimizes erosion of stream banks.
study area	The area specifically evaluated for environmental effects.
subbasin	A smaller portion, or subarea, of a watershed or catchment area.
substrate	Organic and mineral materials that form the bed of a body of water.
threatened species	Any species that is likely to become endangered within the foreseeable future throughout all or a substantial portion of its range.
topography	The physical features of a geographic area taken collectively; especially, the variations in elevation of the earth's surface.
transportation corridor	Travel routes that routinely experience the heaviest volume of vehicles to and from primary locations within a region.
trapezoidal channel	A water conveyance channel such as a stream or ditch with a flat bottom and steep side slopes. Trapezoidal channels are typically used to convey high volumes of water such as flood or stormwater flows.
tributary	A stream or other body of water that contributes its water to another stream or body of water.
turbidity	A condition caused by suspended sediments or floating material that clouds the water and makes it appear dark and muddy.
understory	The vegetation of a forest that grows in the shade of the canopy (branches and foliage of mature trees meeting overhead). The understory usually consists of smaller herbaceous and shrub species such as ferns, various berries, and ivies.
uplands	An area that is not sufficiently wet to exhibit the vegetation, soils, and/or hydrologic characteristics associated with wetlands.

Term	Meaning
vegetative community	A unique and defined area of vegetation within an ecosystem that is composed of specific species of plants.
Water Resource Inventory Area (WRIA)	The Washington State Department of Ecology has designated 62 WRIAs for water and aquatic resource management issues. The terms WRIA and watershed are frequently used interchangeably, although a WRIA may include more than one watershed.
watershed	The region of land that drains into a specific body of water, such as a river, lake, sea, or ocean. Rain that falls anywhere within a given body of water's watershed will eventually drain into that body of water.
wetland	Areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.
wetland boundary	The point on the ground at which a shift from wetlands to non-wetlands or aquatic habitat occurs. These boundaries often follow topographic contours.
wetland hydrology	The condition where water is present during a portion (between 5 and 12.5 percent) of the annual growing season.
wetted perimeter	The width of a watercourse that is covered with water, either flowing or non-flowing.
wildlife corridor	Linear spaces that connect the various areas of an animal's habitat that may be important for feeding, watering, resting, and/or breeding.

SECTION 1 INTRODUCTION

What are the primary features of the Tukwila to Renton Project?

WSDOT is proposing to construct the I-405, Tukwila to Renton Improvement Project (I-5 to SR 169 – Phase 2), referred to as the Tukwila to Renton Project, to relieve congestion. The Tukwila to Renton Project extends approximately four and one half miles along Interstate 405 (I-405), from I-5 to State Route 169 (SR 169), and approximately two miles along SR 167, from I-405 to SW 43rd Street. The project will:

- Add capacity to both I-405 and SR 167.
- Replace bridges over the Green River and Cedar River and add one new bridge over the Green River.
- Improve the SR 181 and SR 169 interchanges.
- Reconstruct the SR 167 interchange consisting of new general-purpose direct-connector ramp from southbound I-405 to southbound SR 167, HOV direct-connector ramps from northbound SR 167 to northbound I-405 and from southbound I-405 to southbound SR 167, and a split-diamond interchange at Lind Avenue and Talbot Road with connecting frontage roads.
- Replace the two local street accesses to Renton Hill.

These improvements represent the second phase of the I-405 Corridor Program for this portion of I-405. The first phase consists of improvements in the Renton Nickel Improvement Project

What is the purpose of this report?

The purpose of the Tukwila to Renton Project Ecosystems Discipline Report is to define and detail the ecosystem elements in the study area. The report also quantifies and qualifies the effects that constructing or not constructing the project would have on these ecosystem elements, including those beneficial effects that would result from any proposed mitigating measures.

What is an ecosystem?

An ecosystem is a community of organisms interacting with each other, and the environment in which they live.

What elements are included in the Ecosystems Discipline Report?

The ecosystem elements that are included in this report include wetlands, aquatic resources, and wildlife habitat. This Ecosystems Discipline Report details the nature and features of these elements. It also details the temporary and permanent effects to wetlands, aquatic resources, and wildlife habitat as a result of the project; measures taken to avoid effects; and mitigation activities to offset negative effects to wetlands, aquatic resources, and wildlife habitat from the project.

Wetlands

What features does a wetland have?

For an area to be defined as a wetland, it must contain the following three features: presence of water, waterlogged (hydric) soils, and vegetation dominated by water tolerant plants.

Wetlands are areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, vegetation adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. The study area contains 22 wetlands that were identified through wetland delineations conducted for the project.

Aquatic Resources

Aquatic resources are defined as aquatic environments, such as streams, rivers, and lakes, and the aquatic-dependant organisms that inhabit those environments. Aquatic resources provide valuable habitat and food sources for various aquatic and terrestrial species.

There are 12 rivers and streams that cross or flow in the vicinity of the project footprint:

- Gilliam Creek
- An unnamed tributary to Gilliam Creek
- Cottage Creek
- The Green River
- Springbrook Creek
- Panther Creek
- Rolling Hills Creek
- An unnamed tributary to Rolling Hills Creek
- Thunder Hills Creek

- An unnamed tributary to Thunder Hills Creek
- The Cedar River
- An unnamed tributary to the Cedar River

Wildlife Habitat

Wildlife habitat is defined as areas of an animal's habitat that may be important for feeding, watering, resting, and/or breeding. Wildlife habitat in the study area consists of areas dominated by forests, shrubs, grasses, or maintained vegetation such as ornamental landscapes or roadside vegetation maintained for highway safety.

Why are ecosystem elements important to consider?

Wetlands, aquatic resources, and wildlife habitat are important elements of the ecosystem in which we live and the significance of these resources for food, livelihood, employment, income, and cultural value is widely recognized. Understanding how the Tukwila to Renton Project affects ecosystem elements is an integral part of the environmental review process. Various federal, state, and local regulations exist to ensure protection and long-term preservation of these resources, and the regulations help to guide development of various project elements.

This report quantifies the beneficial and negative effects to wetlands, aquatic resources, and wildlife habitat that result from the Tukwila to Renton Project. Potential effects to wetlands include loss of hydrologic function, water quality, and habitat function and change in the amount of available wetland habitat. Potential effects to aquatic resources from the project include modification of water quality and quantity conditions, aquatic and riparian habitat, and the amount of habitat accessible by fish and other aquatic species. Potential effects to wildlife habitat include loss or fragmentation of baseline habitat areas.

What studies were completed?

Biologists gathered existing information for the study area through literature and internet research; interviews with local, state, and federal agency personnel; and previously prepared WSDOT reports. Additional information on the ecosystem

elements in the study area was collected by conducting wetland delineations and stream surveys and field verifying wildlife habitat data.

The collected information was then compared to the project footprint, including all roadway and drainage improvements, to assess potential effects resulting from the project.

What are the key messages from this report?

The Tukwila to Renton Project study area contains a variety of important wetlands, aquatic resources, and wildlife habitats that are integral to the long-term viability and sustainability of the study area's ecosystem. The project directly affects the ecosystem both temporarily and permanently. Some of these effects are beneficial (e.g., providing stormwater treatment facilities and providing mitigation for affected areas) and some are negative (e.g., encroachment into riparian and wetland buffers and filling of certain wetlands and streams).

Key effects to wetlands include the complete or partial filling of 12 of the 22 wetlands in the study area, of which six will be entirely filled upon project completion. In addition, nine of the 22 wetlands incur temporary and permanent buffer effects. If a wetland is wholly filled, it is not considered to incur buffer effects. Filling of wetlands and clearing of wetland buffers could affect the water quality, hydrologic, and habitat functions of the wetlands.

Key effects to aquatic resources from the project include overwater or in-stream construction and buffer encroachment in Gilliam Creek, the Green River, Panther Creek, Rolling Hills Creek, an unnamed tributary to Rolling Hills Creek, Thunder Hills Creek, an unnamed tributary to Thunder Hills Creek, and the Cedar River.

Key effects to wildlife habitat include adding impervious surfaces within the study area, changing existing types of wildlife habitat, and reducing or fragmenting the available wildlife habitat.

The project also involves construction activities that could temporarily affect ecosystem elements in the study area. Effects to ecosystem elements from construction activities include disturbances to upland, wetland, and riparian vegetation; stream diversions; in-water work; temporary filling of wetlands and streams; and sedimentation.

What is in-water work?

In-water work is any construction activity that occurs below the water line of a given waterbody. Examples of in-water work include driving of piling within the water and placement of coffer dams to exclude water from a work area.

Project effects to ecosystem elements will be mitigated in accordance with applicable local, state, and federal laws.

What measures are proposed to avoid or reduce effects?

The Tukwila to Renton Project was designed to avoid effects to ecosystem elements to the greatest extent practicable. Approaches such as locating project features away from ecosystem elements, installing retaining walls, and free spanning rivers were incorporated throughout the design of the project. During construction, WSDOT will require that appropriate best management practices (BMPs) and conservation measures are implemented to reduce potential effects to ecosystem elements from construction. Mitigation activities to offset project effects are performed in accordance with applicable local, state, and federal regulations that govern the ecosystem elements detailed in this discipline report.

Appropriate and available construction BMPs, such as restricting in-stream construction to times when fish are unlikely to be present, are employed to minimize effects from construction.

In all cases where direct temporary or permanent effects on ecosystem elements are unavoidable, mitigation actions are implemented to compensate for affected resources. Mitigation also helps to offset any construction-related negative effects on these elements. A portion of the stream and river mitigation for the Tukwila to Renton Project is expected to be implemented through the Panther Creek Watershed Rehabilitation Plan (PCWRP). The PCWRP is an I-405 Water Resource Initiative that will provide stream mitigation for the portion of the project within the Panther Creek and lower Springbrook Creek subbasins. In addition to the PCWRP, additional mitigation activities are anticipated for project effects that will occur in the Green and Cedar Rivers. Due to a lack of dedicated funding for the future phases of the project that would affect the Green and Cedar Rivers, specific mitigation activities for effects to these rivers have not been identified. Wildlife habitat mitigation will occur in the immediate vicinity of the project. All mitigation sites will be approved by appropriate regulatory agencies during the project permitting process.

What would happen if we adopt the No Build Alternative?

The No Build Alternative would have few direct effects on the ecosystems in the study area because no wetlands, aquatic resources, or wildlife habitats would be removed, filled, shaded, or otherwise directly disturbed. Riparian and wetland buffers would be minimally disturbed through routine maintenance such as mowing or brushing. Baseline roadway-related stormwater runoff patterns could result in continued negative effects to wetlands and aquatic resources from poor water quality due to untreated stormwater and large quantities of water that result from a lack of stormwater volume controls (e.g., stormwater retention ponds). Water quality and quantity impairment can lead to the harm or mortality (death) of a variety of aquatic organisms and can reduce the overall health of an ecosystem over time.

SECTION 2 PROJECT DESCRIPTION

What is the intent of the Tukwila to Renton Project?

WSDOT is proposing to construct the I-405, Tukwila to Renton Improvement Project (I-5 to SR 169 – Phase 2), referred to as the Tukwila to Renton Project, to relieve congestion. Relieving congestion will benefit the public by:

- Lowering the number of accidents thus improving safety.
- Increasing overall speeds through this section of freeway.
- Improving response times for emergency service vehicles using I-405.
- Improving access to and from I-405 and local circulation.

The Tukwila to Renton Project extends approximately four miles along I-405, from I-5 to SR 169, and approximately two miles along SR 167, from I-405 to SW 43rd Street. The project adds capacity to both I-405 and SR 167; improves the SR 181 and SR 169 interchanges; reconstructs the SR 167 interchange consisting of a split-diamond interchange at Lind Avenue and Talbot Road with connecting frontage roads, general-purpose direct-connector ramp from I-405 to SR 167 southbound, and high-occupancy vehicle (HOV) direct-connector ramps from SR 167 northbound to I-405 northbound and from I-405 southbound to SR 167 southbound. These improvements are detailed in the following section.

What are the details of the Tukwila to Renton Project?

The Tukwila to Renton Project improvements are described from west to east (northbound) along the study area on the following pages. These improvements are also illustrated on Exhibits 2-1 through 2-15.

What is a split-diamond interchange?

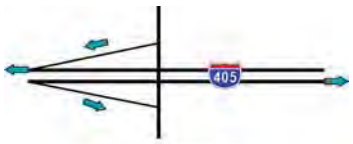
This interchange type consists of two half-diamond interchanges at arterials. These are connected by two, one-way frontage roads. Traffic enters and exits the freeway at the two arterials, creating an elongated diamond configuration as shown.



Split Diamond

What is a half-diamond interchange?

It is an interchange where traffic exits or enters the freeway in one direction. This creates a triangular or half-diamond configuration as shown.



Half Diamond

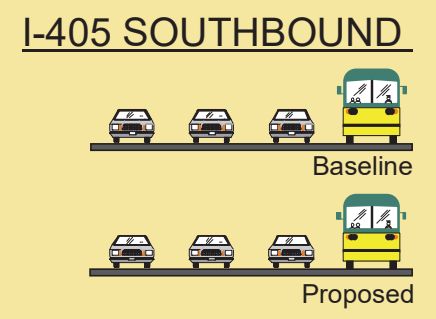
Exhibit 2-1: Project Features, Sheet 1

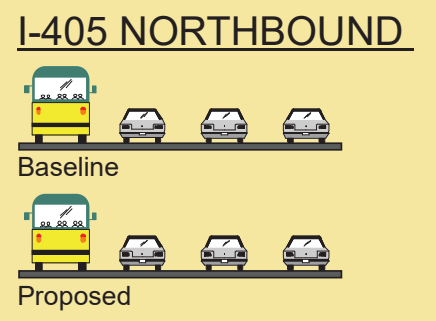


I-405 from I-5 to East of SR 181

For this portion of the project, WSDOT will:

- Remove the existing northbound I-405 Tukwila Parkway on-ramp. See Exhibits 2-2 and 2-3 for where the project will provide a new on-ramp.
- Realign I-405 mainline slightly to the south beginning just west of the existing northbound I-405 Tukwila Parkway on-ramp to the SR 181 interchange as shown in Exhibits 2-1 and 2-2.





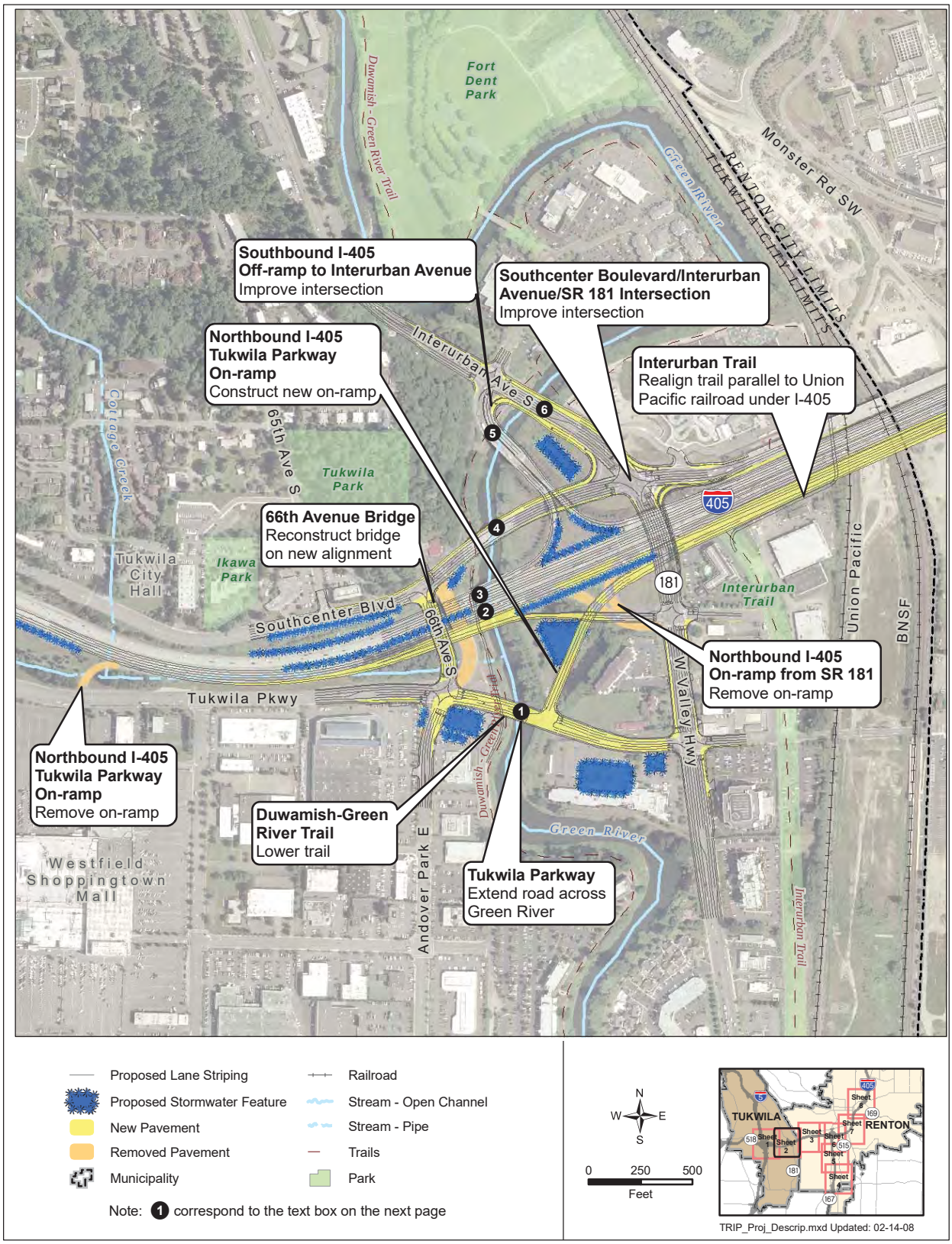
The project will not change capacity along this section

What are baseline conditions for this project?

Baseline conditions describe the site conditions just before construction of the project begins. This can include the build conditions of earlier phased projects that are already approved and funded and expected to be complete before the next project begins. Baseline provides an important point of comparison for understanding the effects of the proposed build alternative.

For the Tukwila to Renton Project, the baseline condition assumes that the Renton Nickel Improvement Project has been completed.

Exhibit 2-2: Project Features, Sheet 2



I-405 at SR 181 Interchange

WSDOT designed the improvements in Exhibits 2-2 and 2-3 to improve freeway and local travel in this area. WSDOT will:

- Improve the SR 181 interchange:
  - Remove the existing SR 181 on-ramp to northbound I-405.
  - Extend Tukwila Parkway from the intersection with 66th Avenue east over the Green River to SR 181.
  - Construct new northbound I-405 on-ramp from Tukwila Parkway just east of the new crossing over the Green River (replaces the two existing on-ramps).
  - Reconstruct the 66th Avenue S bridge over I-405 on a new alignment to the west and reconstruct the intersections with Southcenter Boulevard and Tukwila Parkway.
  - Reconstruct the off-ramp from northbound I-405 to SR 181.
  - Improve local arterials within the interchange area such as Southcenter Boulevard and Interurban Avenue.
- Reconstruct five bridges and build one new bridge over the Green River.
- Lower the Duwamish-Green River Trail.
- Reconstruct the I-405 structures over SR 181.
- Realign the Interurban Trail.

What bridge construction will occur over the Green River?

❶ Tukwila Parkway Bridge (new)

❷ Northbound I-405 Bridge

❸ Southbound I-405 Bridge

❹ Southcenter Boulevard Bridge

❺ Off-Ramp Bridge from southbound I-405.

❻ Interurban Avenue Bridge

See Exhibit 2-2 for the bridge locations.

Exhibit 2-3: SR 181 Interchange Improvements

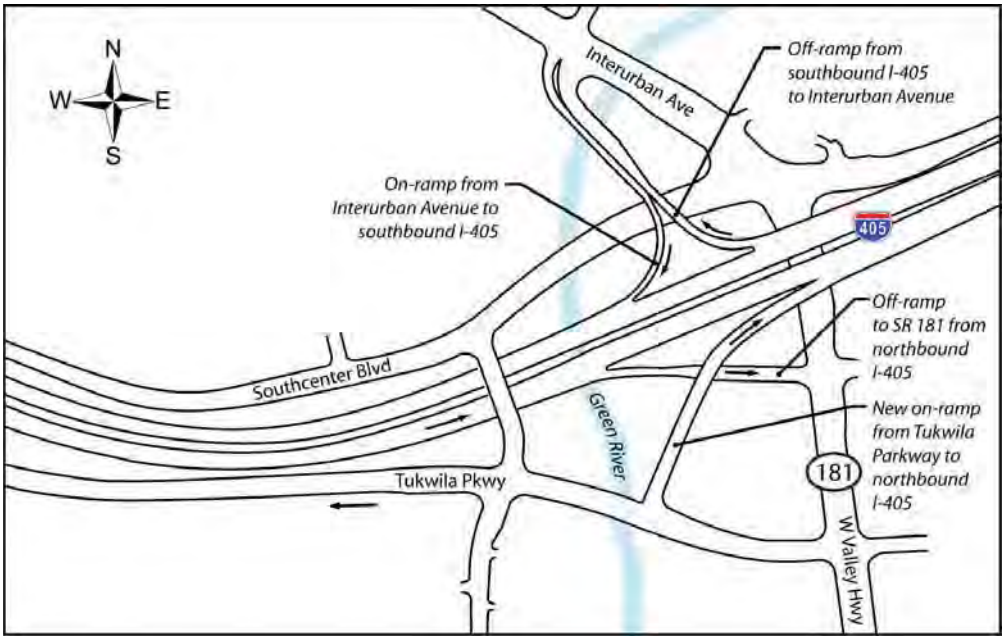
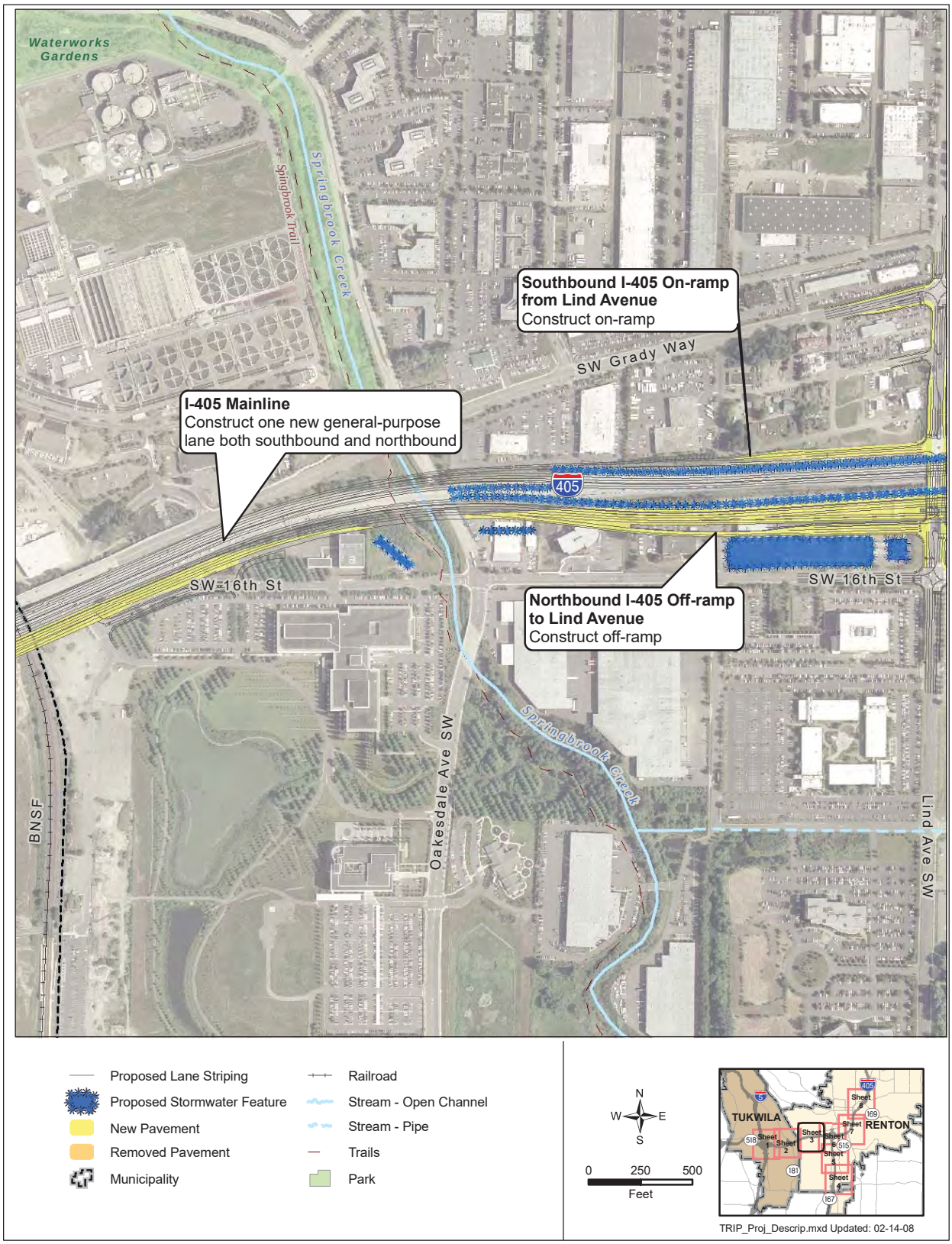


Exhibit 2-4: Project Features, Sheet 3



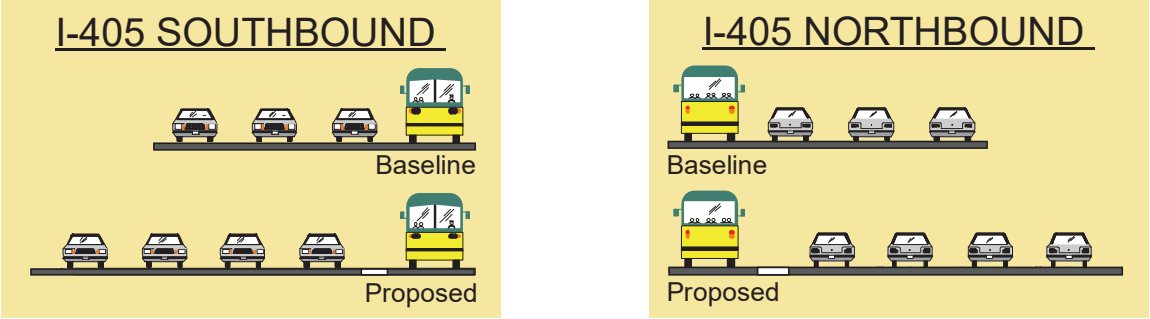
I-405 from East of SR 181 to SR 167 Interchange

From the SR 181 interchange east, WSDOT will realign I-405 to the south. This will:

- Provide a smooth transition onto the new Springbrook Creek/Oakesdale Avenue bridge that was constructed under the Renton Nickel Improvement Project.
- Minimize effects on SW Grady Way and businesses north of I-405.

In addition to realigning I-405, WSDOT will:

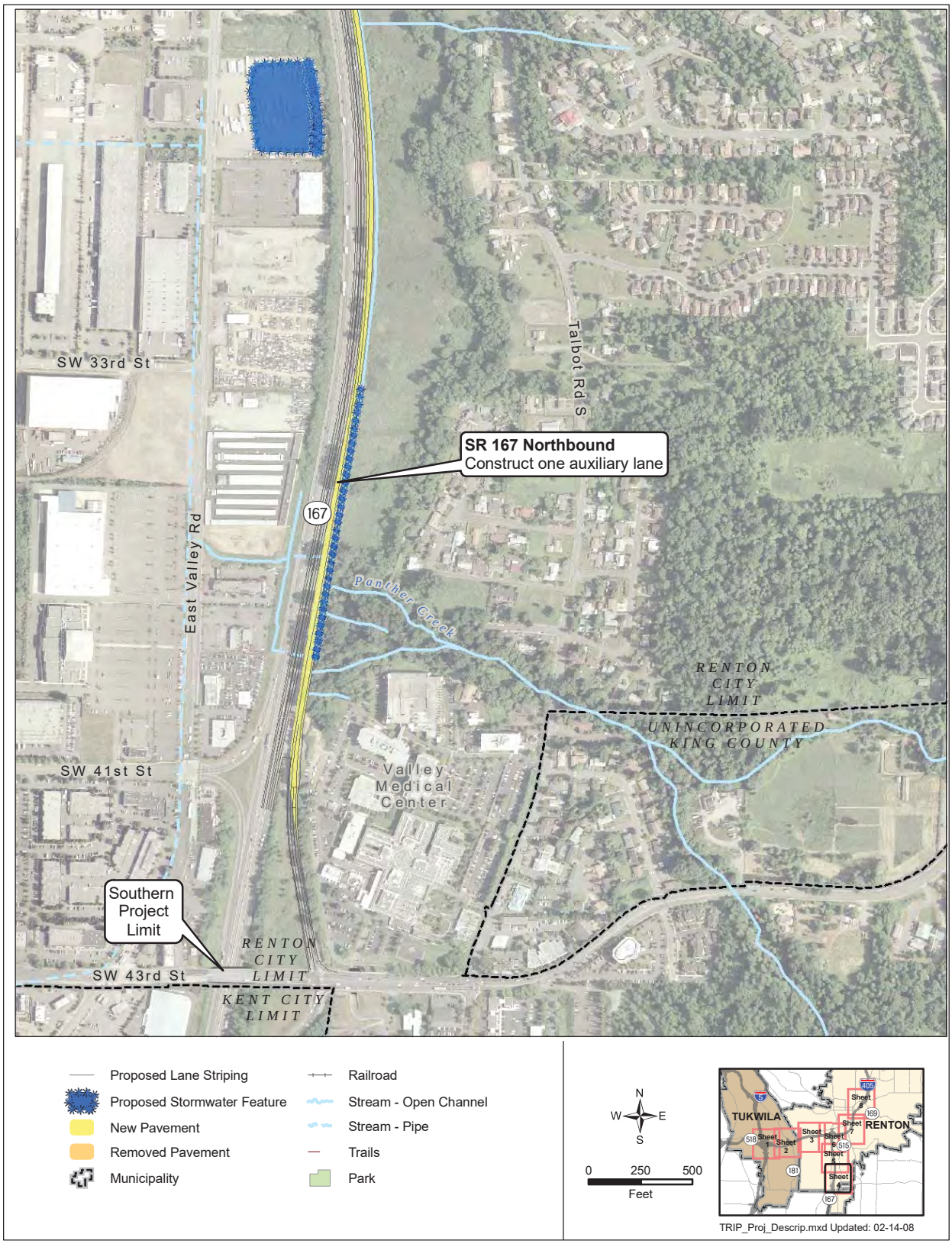
- Construct one additional general-purpose lane in both directions on I-405 from SR 181 through SR 167.
- Stripe lanes to provide a buffer between HOV and general-purpose lanes along I-405.



Project improvements will add capacity to I-405 for both southbound and northbound traffic and will provide a buffer between the HOV lane and the general-purpose lanes

- Stripe the bridges over Springbrook Creek/Oakesdale Avenue to provide five lanes in both directions.
- Reconstruct I-405 structures over the Burlington Northern Santa Fe (BNSF) and Union Pacific railroads.
- Construct a half-diamond interchange at Lind Avenue (see sidebar on page 2-1).

Exhibit 2-5: Project Features, Sheet 4



SR 167 from SW 43rd Street On-ramp North to SW 27th Street

In this area, WSDOT will:

- Construct an auxiliary lane on northbound SR 167 from SW 43rd Street to SW 27th Street.
- Stripe lanes to provide a buffer between HOV and general-purpose lanes along northbound SR 167.

As shown on Exhibit 2-5, the new northbound lane will be added north of the SW 43rd Street on-ramp. This will improve the ability of traffic to merge onto SR 167 and increase capacity along this stretch. To minimize effects on the streams and wetlands along SR 167, WSDOT has used retaining walls instead of fill slopes.

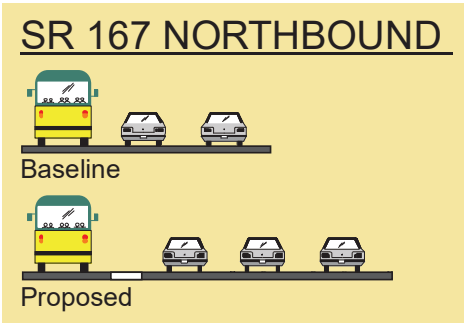
What is an auxiliary lane?

An auxiliary lane is a lane added between interchanges—from one on-ramp to the next off-ramp. It is dedicated to traffic entering and leaving the freeway and provides motorists with more time and extra room to accelerate or decelerate and merge when getting on and off the freeway.

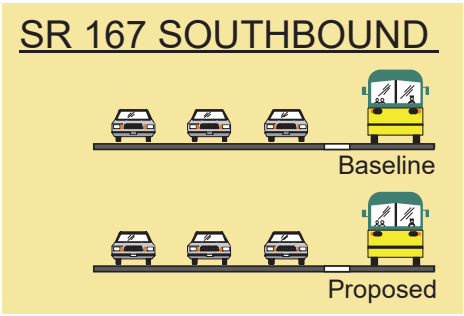
The signs below show how an auxiliary lane changes how an on-ramp operates.



Existing Proposed

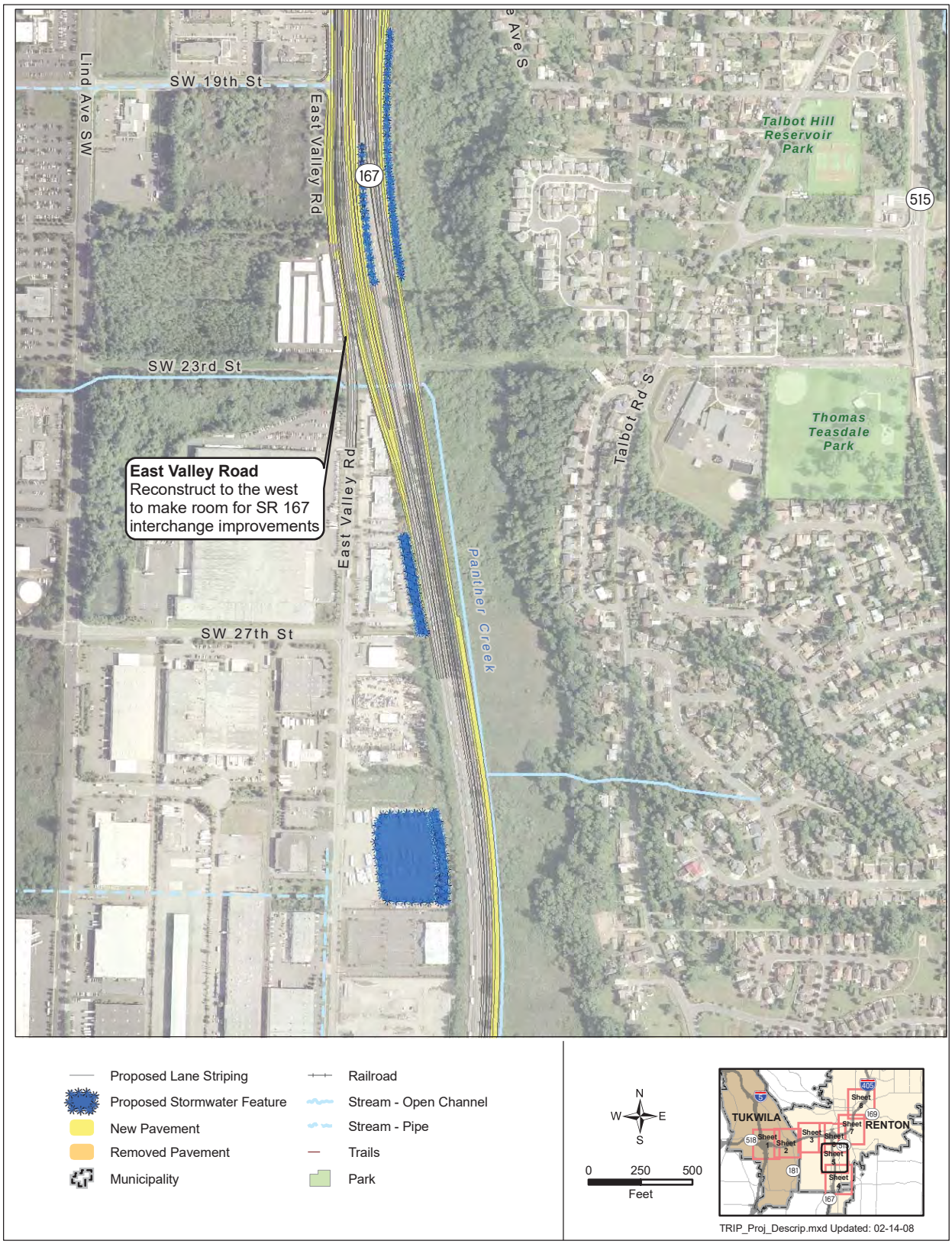


Project improvements will add capacity to northbound SR 167 and will provide a buffer between the HOV lane and the general-purpose lanes



The project will not affect the southbound lanes of SR 167

Exhibit 2-6: Project Features, Sheet 5

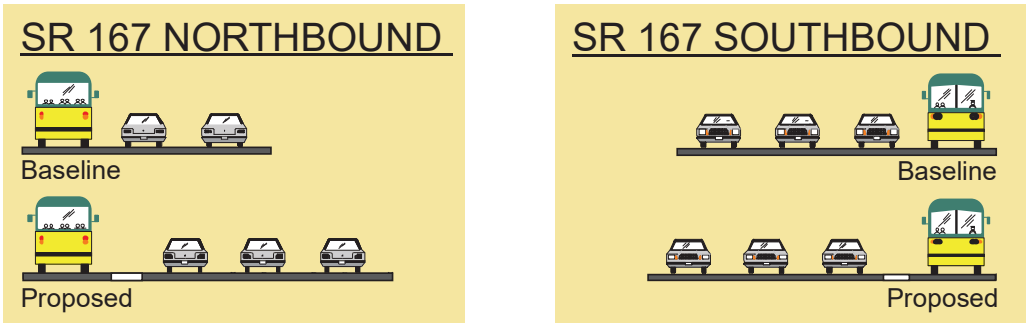


SR 167 from SW 27th Street to I-405

Along this section of SR 167, the project will:

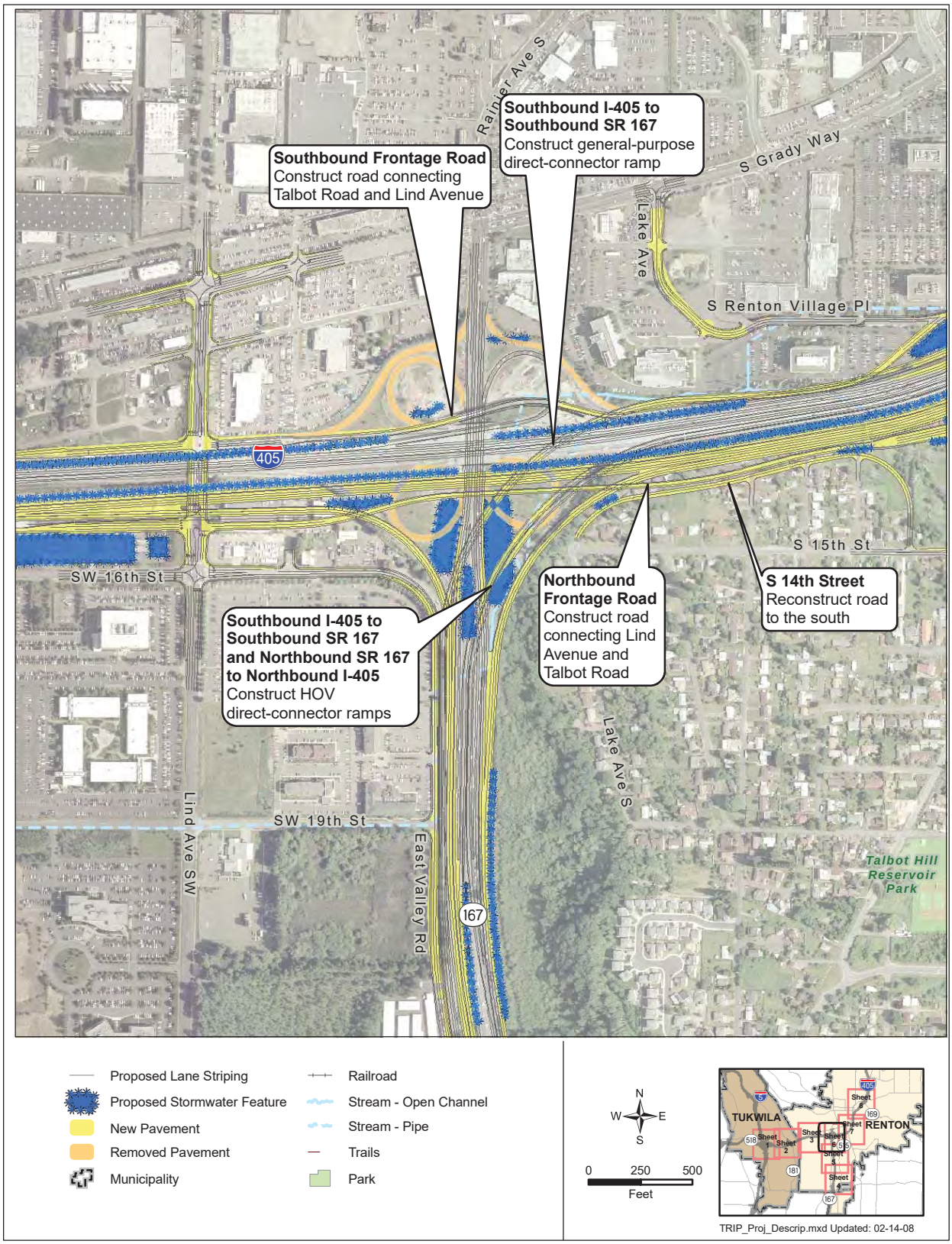
- Reconstruct SR 167 between SW 27th Street and I-405 to accommodate the reconstructed SR 167 interchange as shown on Exhibits 2-7 to 2-9.
- Reconstruct East Valley Road to the west of its current alignment between SW 23rd Street and SW 16th Street to accommodate the reconstructed SR 167 interchange.
- Stripe lanes to provide a buffer between HOV and general-purpose lanes along SR 167.
- Construct an auxiliary lane on northbound SR 167 from SW 27th Street to I-405.

WSDOT has designed the improvements in this area to the west as much as possible to minimize effects on the Panther Creek wetlands while also limiting the effects on businesses west of SR 167. To further minimize the area needed to accommodate the improvements, the new southbound I-405 to southbound SR 167 direct-connector ramp will be built over local street and freeway improvements as shown on Exhibit 2-9. WSDOT also used design features such as retaining walls to minimize the area needed for improvements.



Project improvements will add capacity to northbound SR 167 and will provide a buffer between the HOV lane and the general-purpose lanes in both the northbound and southbound directions of SR 167

Exhibit 2-7: Project Features, Sheet 6



I-405 Interchange with SR 167

Within the I-405/SR 167 interchange, the project will improve freeway to freeway access and local access.

Freeway to Freeway Access

To improve access, WSDOT will:

- Construct a general-purpose direct-connector ramp from southbound I-405 to southbound SR 167, replacing the existing loop ramp.
- Reconstruct exterior ramps from northbound I-405 to southbound SR 167 and from northbound SR 167 to northbound I-405, replacing the existing ramps. This project will also add a general-purpose lane to both ramps.
- Construct HOV direct-connector ramps from southbound I-405 to southbound SR 167 and from northbound SR 167 to northbound I-405.
- Maintain existing loop ramp from northbound SR 167 to southbound I-405.

Exhibit 2-8 focuses on the freeway to freeway interchange improvements and Exhibit 2-9 presents how these improvements will look.

Exhibit 2-8: Freeway to Freeway Ramps in Reconstructed I-405/SR 167 Interchange

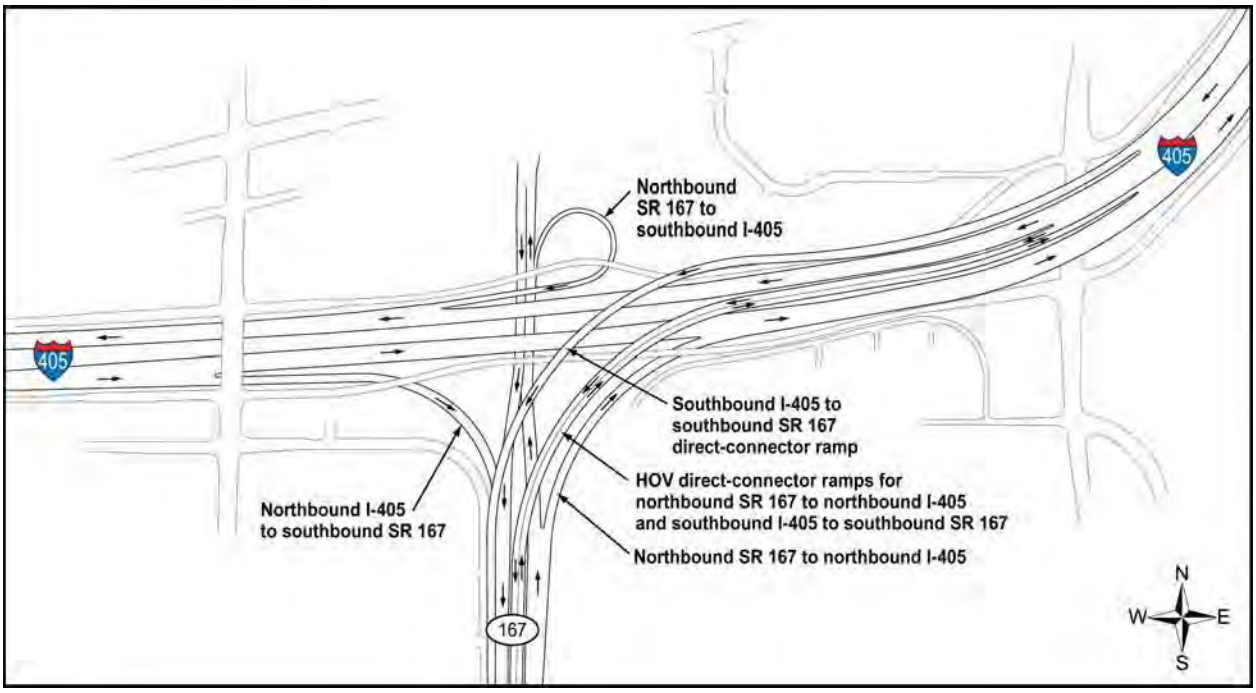


Exhibit 2-9: Rendering of I-405/SR 167 Interchange Improvements



Local Access

WSDOT will improve local access at the SR 167 interchange. The improvements will:

- Construct a split-diamond interchange at Lind Avenue and Talbot Road (SR 515). See Exhibits 2-10 and 2-11.
- Construct southbound and northbound frontage roads connecting Lind Avenue and Talbot Road. The southbound frontage road will reuse the existing I-405 to SR 167 southbound bridge.
- Reconstruct the Lind Avenue bridge over I-405.
- Reconstruct the I-405 structures over Talbot Road.
- Improve local street intersections.
- Provide new connection to Grady Way from S Renton Village Place.

Exhibit 2-10: Split-diamond Interchange at Lind Avenue and Talbot Road

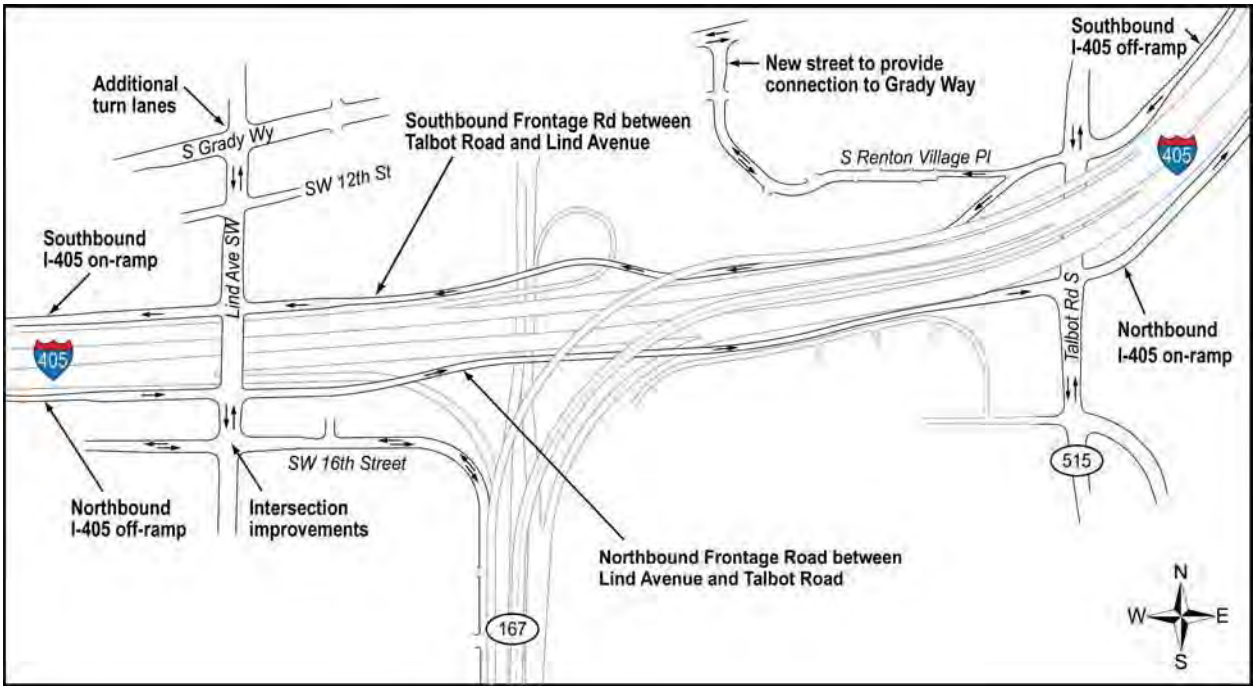
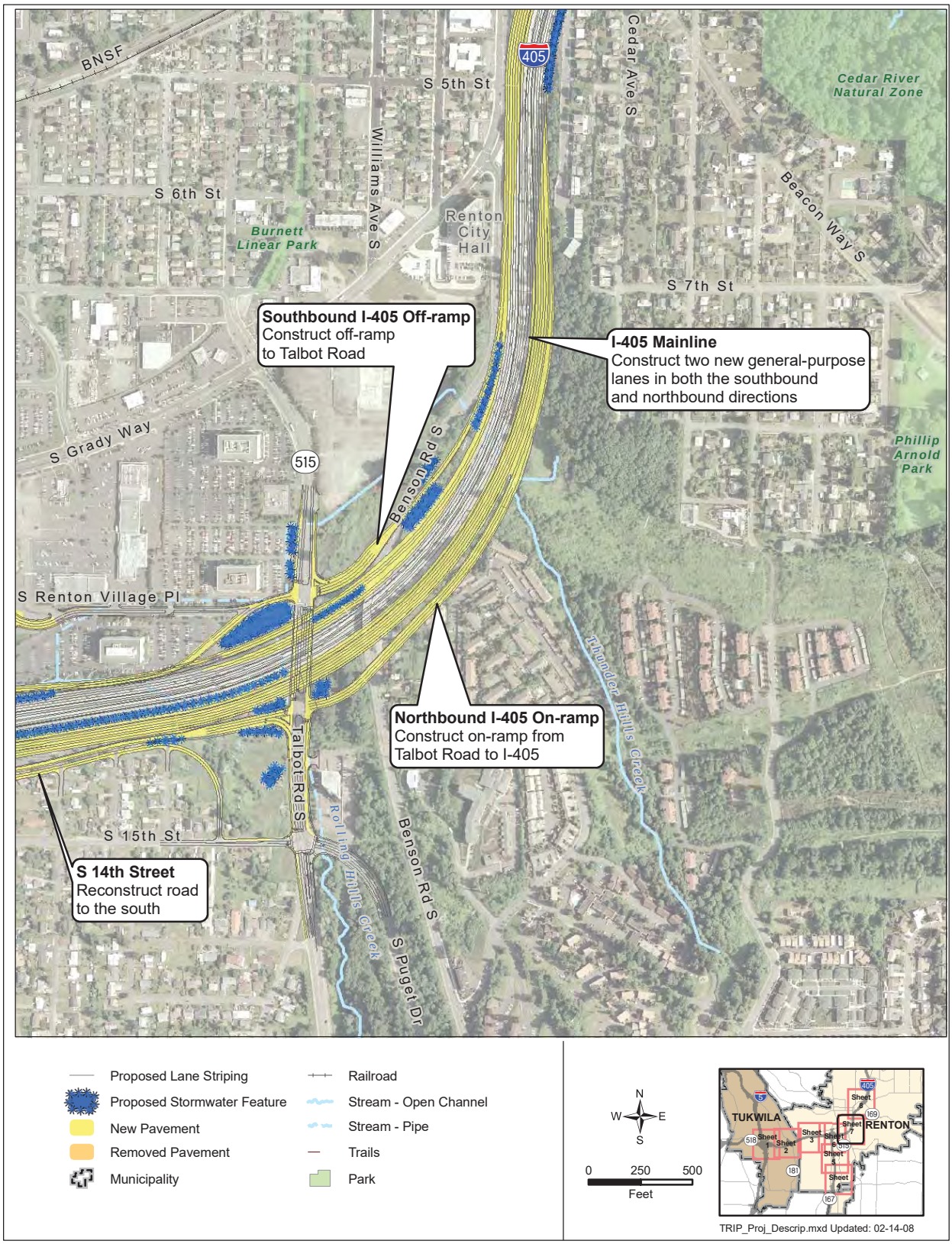


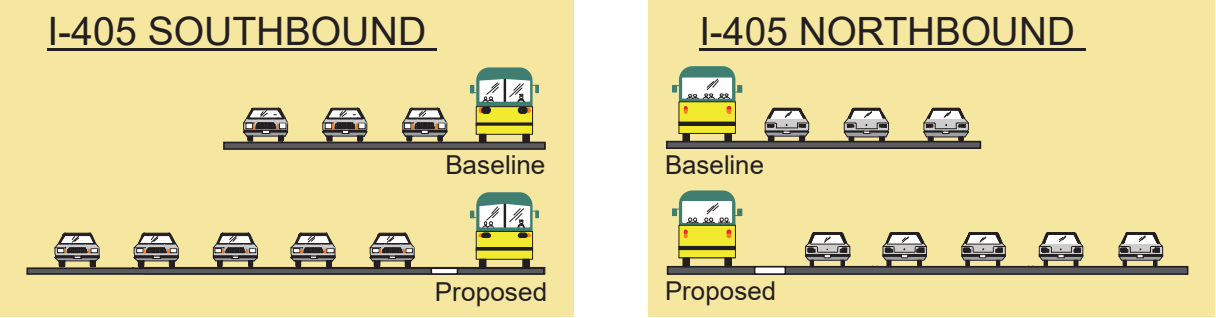
Exhibit 2-11: Project Features, Sheet 7



I-405 from East of SR 167 Interchange to North of S 5th Street

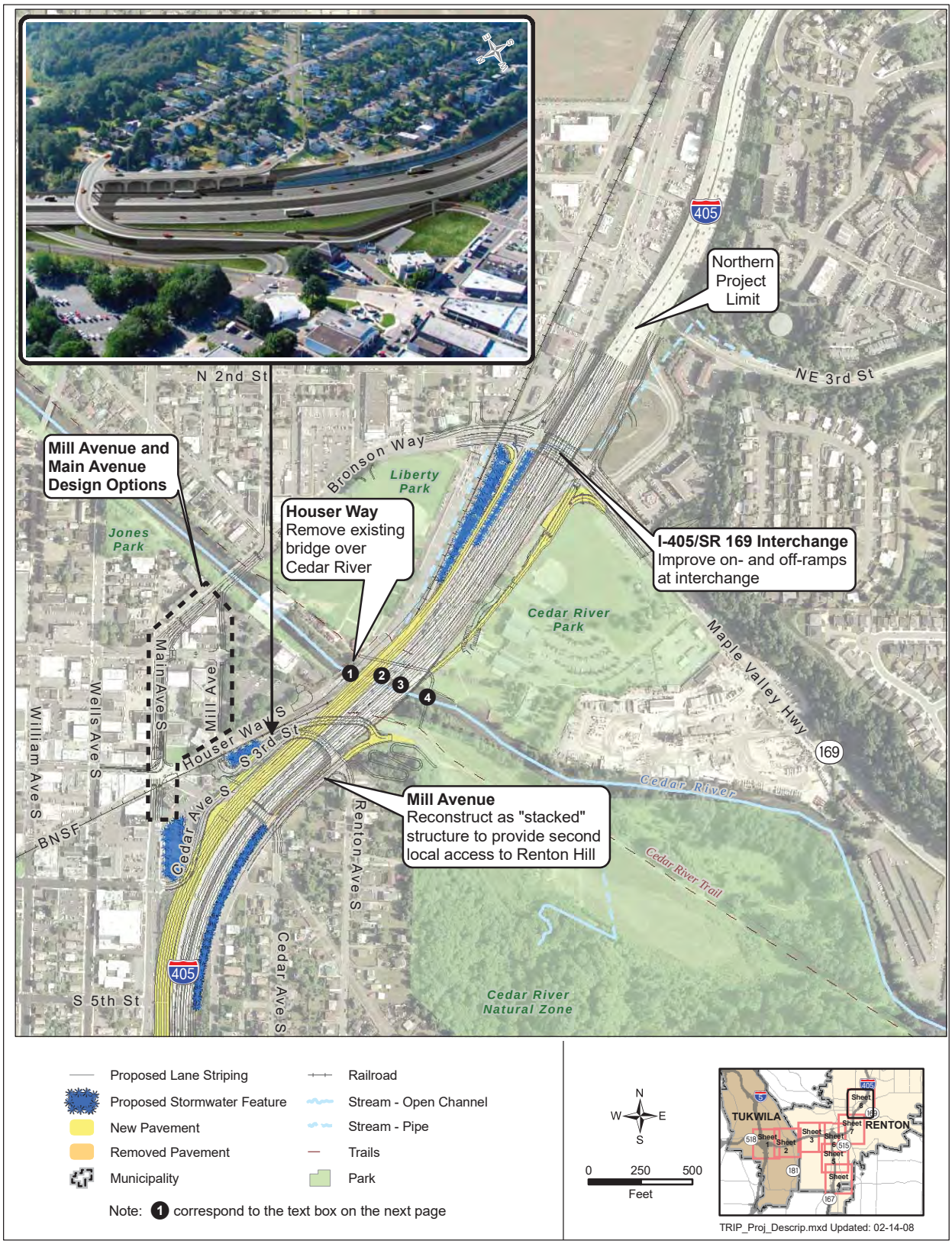
For the section of I-405 that extends from the SR 167 interchange past Renton City Hall as shown on Exhibit 2-11, WSDOT will:

- Construct two additional lanes in both directions on I-405 from SR 167 through SR 169.
- Stripe lanes to provide a buffer between HOV and general-purpose lanes along I-405.
- Construct a new half-diamond interchange at Talbot Road as shown on Exhibit 2-10.
- Reconstruct S 14th Street south of its existing location.



Project improvements will add capacity to I-405 for both southbound and northbound traffic and will provide a buffer between the HOV lane and the general-purpose lanes

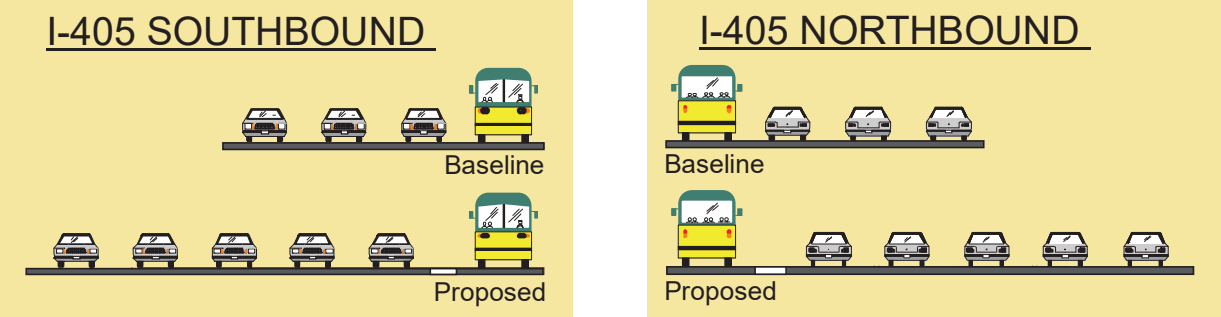
Exhibit 2-12: Project Features, Sheet 8



I-405 from S 5th Street to SR 169

This last portion of the Tukwila to Renton Project crosses the Cedar River to the SR 169 interchange. In this section, WSDOT will:

- Construct two additional lanes in both directions on I-405 from SR 167 through SR 169.
- Stripe lanes to provide a buffer between HOV and general-purpose lanes along I-405.



Project improvements will add capacity to I-405 for both southbound and northbound traffic and will provide a buffer between the HOV lane and the general-purpose lanes

- Cantilever the I-405 structures over Main Avenue.
- Reconstruct three bridges over the Cedar River: southbound I-405, northbound I-405, and a pedestrian bridge.
- Relocate the Burlington Northern Santa Fe railroad bridge.
- Close Houser Way south of the Cedar River north to Bronson Way and remove the bridge over the Cedar River.
- Reroute northbound traffic to Bronson Way, which will be striped to accommodate the new traffic pattern.
- Reconstruct two local street accesses to Renton Hill.

What bridge construction will occur over the Cedar River?

❶ Burlington Northern Santa Fe Railroad Bridge
❷ Southbound I-405 Bridge
❸ Northbound I-405 Bridge
❹ Pedestrian Bridge

See Exhibit 2-12 for the bridge locations.

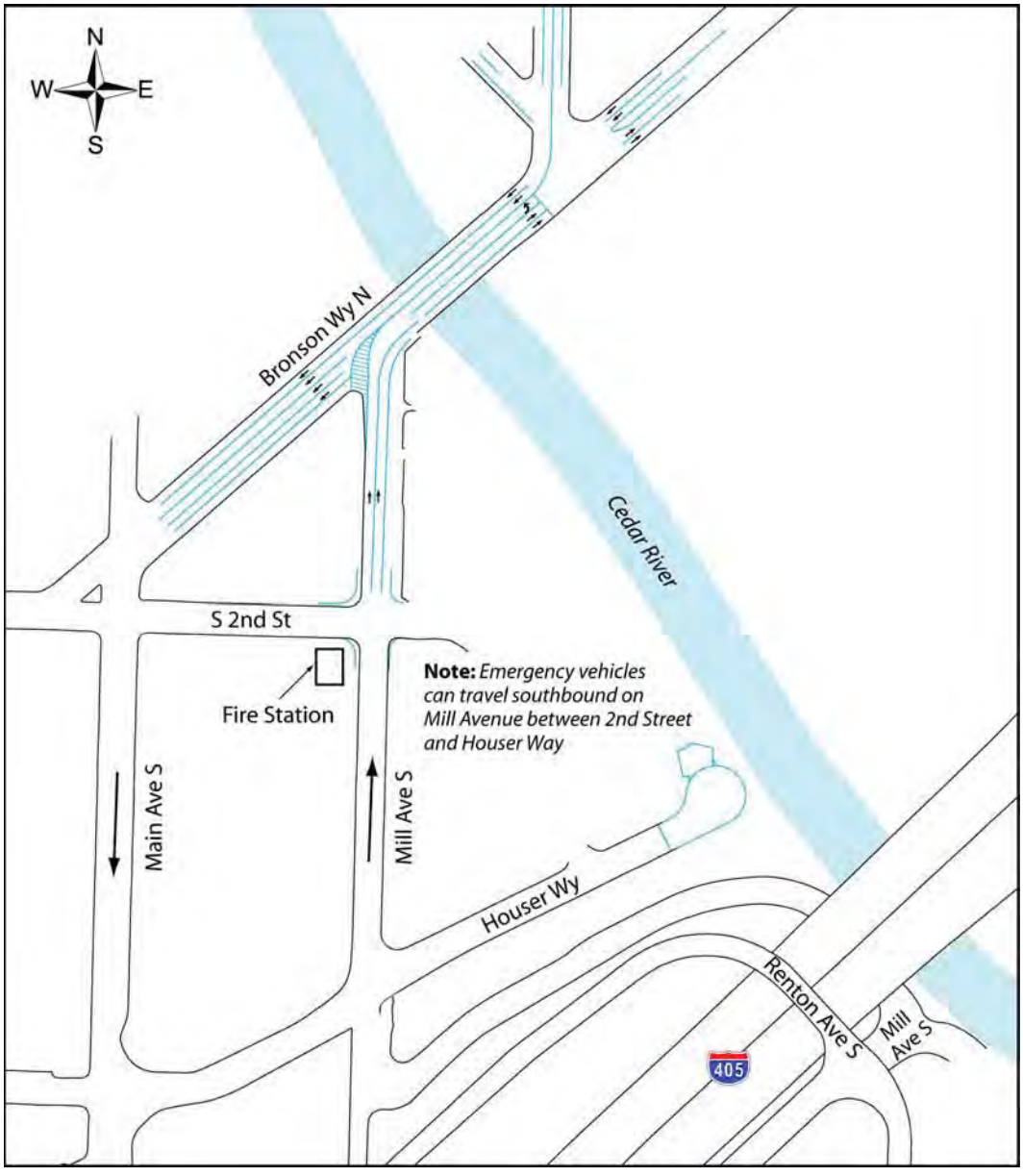
To accommodate the I-405 improvements, the Tukwila to Renton Project also required rerouting traffic from Houser Way and changing access to Renton Hill. These improvements are discussed on the following pages.

Mill Avenue and Main Avenue Design Options

To accommodate widening I-405 over the Cedar River, the Houser Way bridge will be closed. WSDOT worked closely with the City of Renton to develop the most acceptable and feasible solution for redirecting traffic coming from south of Houser Way. For northbound traffic within Renton south of the Cedar River, two design options are being considered:

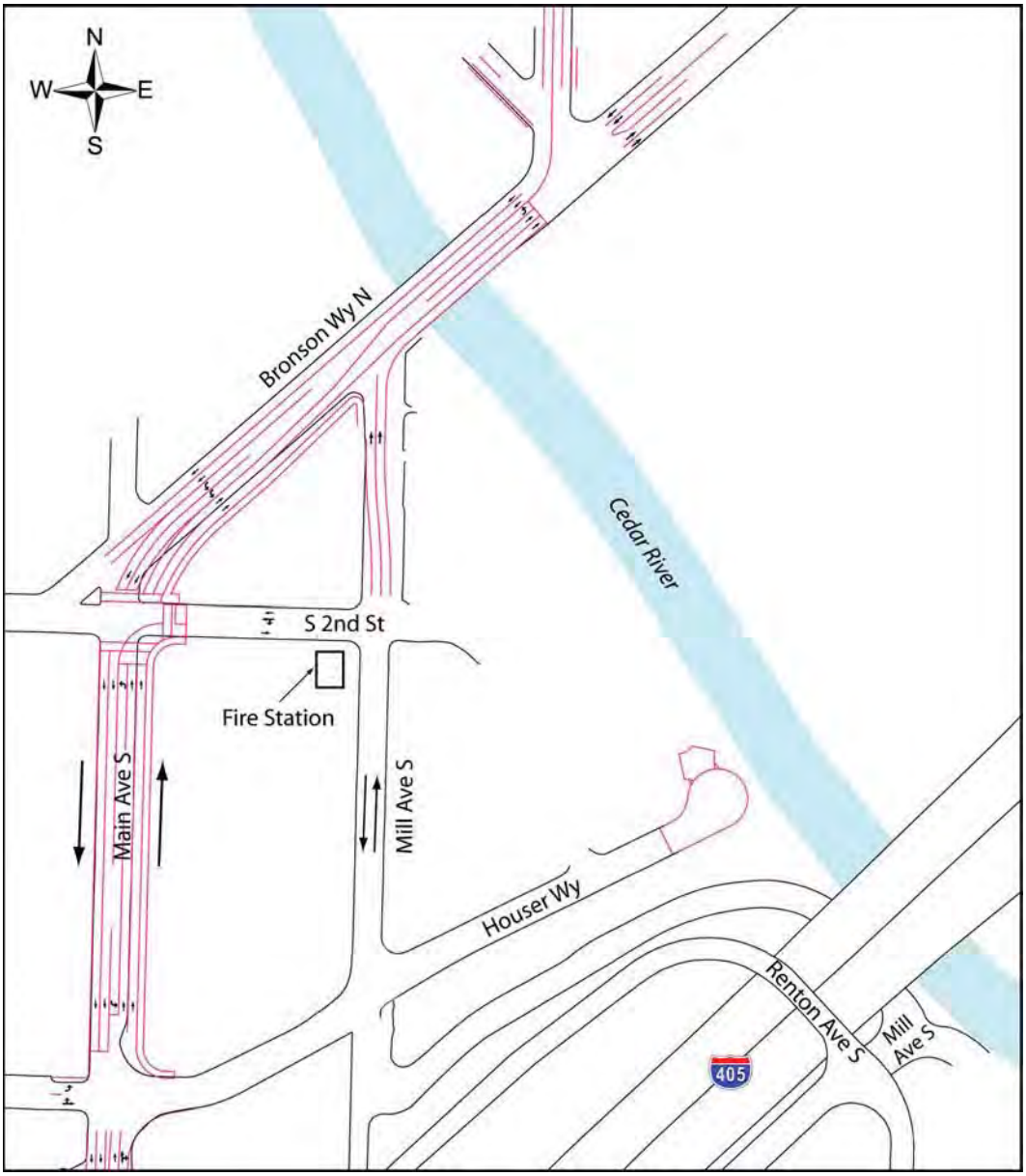
- The first option stripes Mill Avenue as a one-way street to provide two lanes northbound from the intersection of Houser Way and Mill Avenue to Bronson Way (see Exhibit 2-13).

Exhibit 2-13: Mill Avenue Design Option for Local Access to Bronson Way



- The second option leaves Mill Avenue as a two-way street up to the intersection with 2nd Street where it will be striped for one-way traffic northbound and reconfigures Main Avenue, a one-way street southbound, to provide two-way traffic. Main Avenue would be widened and striped for two-way traffic to provide access from the south to Bronson Way (see Exhibit 2-14).

Exhibit 2-14: Main Avenue Design Option for Local Access to Bronson Way

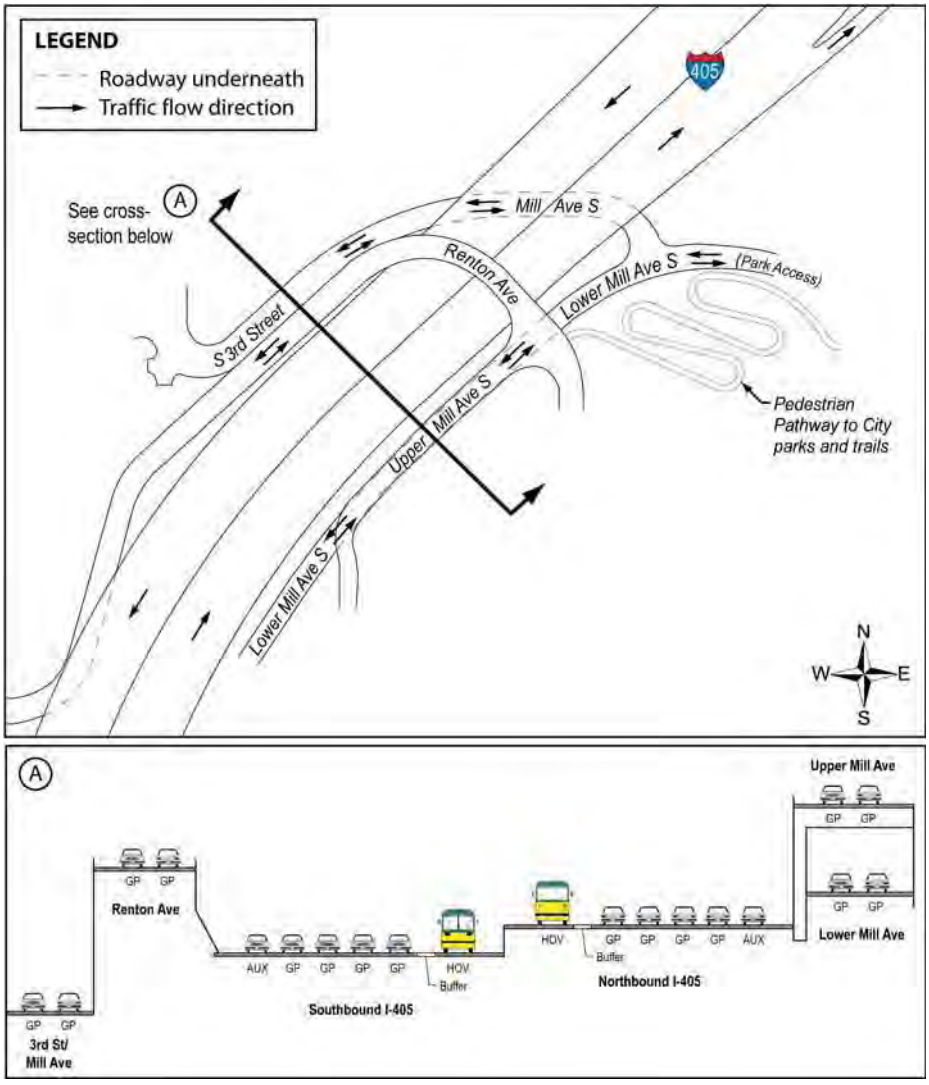


Changes to Renton Hill Access

As shown in the inset on Exhibit 2-12, the Renton Hill Access will be changed to accommodate the widening of I-405. These changes are detailed in Exhibit 2-15 below. WSDOT will:

- Reconstruct the Renton Avenue bridge over I-405 and realign the north end to intersect with Main Avenue rather than Houser Way as it currently does.
- Reconstruct Mill Avenue as a stacked structure that also provides access to Renton Hill as shown in Exhibit 2-15.
- Remove the existing Cedar Avenue bridge.
- Construct a pedestrian pathway connecting residents on Renton Hill to the City's parks and trails.

Exhibit 2-15: New Local Access for Renton Hill



What are the construction methods and schedule for implementation?

Construction Methods

The Tukwila to Renton Project will use different methods to construct the various project elements. The main approaches to construction for this project are described below.

At-grade Construction

At-grade construction, which occurs on the same elevation as the existing lanes, will be staged to minimize traffic delays and detours. One method would shift lanes toward the median. WSDOT then would place a concrete barrier to provide a work zone outside of the roadway. A second method would build the entire new section, then shift traffic to the new portion and reconstruct the existing section. Staging allows construction to occur safely without closing lanes for the duration of construction.

Bridge Construction

Bridge construction will generally occur in multiple stages to minimize traffic delays and detours. The following describes a typical staging approach for bridge construction on I-405 that will be used where practicable. As the first step, traffic is shifted toward the I-405 median, and the existing lanes and shoulders are narrowed slightly. This approach allows widening of the existing structure or construction of the new bridge, depending on the design, to occur on the outside of the roadway. Next, traffic is shifted onto the new bridge area. If the bridge is being replaced rather than simply widened, the old structure is demolished after traffic is shifted to the new bridge.

Road Closures

Some road closures will be necessary to construct various improvements. WSDOT will notify local agencies, public services, utilities, and the general public prior to any temporary road closures and will clearly mark detour routes. As much as possible, closures will be scheduled during times that will have the least impact on the traveling public.

Traffic Control

WSDOT will work with local agencies to develop detours as needed during construction. Prior to starting construction, WSDOT will develop a traffic control plan. The plan's primary objectives will be to provide a safe facility, to streamline the construction schedule, and to minimize reductions to existing traffic capacity. To lessen effects on traffic, the duration of activities will be minimized and reductions in capacity will be limited and will be targeted to a period when they will have the least effect.

Schedule

Because the I-405 Corridor Program master plan configuration is very expensive, WSDOT will implement the improvements in phases as funding becomes available. The Tukwila to Renton Project represents Phase 2 for this section of I-405. This discipline report assumes a baseline condition where the Phase 1 improvements, Renton Nickel Improvement Project, have been completed prior to the start of Phase 2.

Construction of the entire Tukwila to Renton Project is expected to be spread over several years as funding becomes available. For this reason, construction activity will not be constant throughout the entire study area and the duration will vary depending on the improvement being constructed.

The first element of the Tukwila to Renton Project that is proposed for construction is the SR 515 Interchange Project. This portion is funded through the 2005 Transportation Partnership Account (TPA). This Tukwila to Renton project element will construct a half-diamond interchange on I-405 at Talbot Road (SR 515). Construction of this element is scheduled to begin in autumn of 2008. The remaining elements of the Tukwila to Renton Project are unfunded at this time.

To complete the master plan for I-405 from I-5 to SR 169, additional work will need to be accomplished in this area.

Does this project relate to any other improvements on I-405 or connecting highways?

The Tukwila to Renton Project is part of a comprehensive program to address the congestion problems in the I-405

corridor. WSDOT worked with the Federal Highway Administration (FHWA), Federal Transit Administration, Central Puget Sound Regional Transit Authority, King County, and local governments to develop strategies to reduce traffic congestion and improve mobility along the I-405 corridor. The I-405 Corridor Program Environmental Impact Statement (EIS) and Record of Decision (ROD), published in 2002, document these strategies. The selected alternative has become known as the master plan.

WSDOT is constructing the master plan as funding becomes available. For the southern end of I-405 extending from I-5 to SR 169, the Renton Nickel Improvement Project was Phase 1. This phase was largely funded by the statewide transportation-funding plan called the "nickel package," which was approved by the Washington State Legislature in 2003. In 2005, the legislature passed a second funding package, TPA. It also provided funding for the Renton Nickel Improvement Project. Construction of the Renton Nickel Improvement Project began in 2007 and will be completed by 2011.

The other I-405 projects that relate to the Tukwila to Renton Project address the sections north of SR 169 to the end of I-405 at I-5 in Lynnwood. Of these projects, the first stage for the Kirkland area of I-405 is currently under construction. The first stage for Bellevue, SE 112th Street to SE 8th Street, began construction in 2007. As each successive project becomes operational, the public will benefit from the improved traffic movement, safety, and capacity along the I-405 corridor.

Another related project is the HOT Lanes Pilot Project on SR 167. This project will convert the existing HOV lanes to High-Occupancy Toll (HOT) lanes between Auburn and Renton. HOT lanes will better manage the SR 167 corridor traffic demand through tolling. The Tukwila to Renton Project will tie into the HOT lanes project.

In addition, some local agencies are working on projects that will tie into the work on I-405. For example, the City of Renton is proposing to reconstruct Rainier Avenue S, in particular, improving local access and circulation to the interchange with I-405 and SR 167.

As well as the road projects discussed above, WSDOT and the City of Renton are constructing the Springbrook Creek

Wetland and Habitat Mitigation Bank. This project will create a large wetland complex that will provide mitigation credits to multiple projects including the Tukwila to Renton Project.

What is the No Build Alternative?

The No Build Alternative assumes that the improvements associated with the Renton Nickel Improvement Project are constructed as does the baseline condition. Only routine activities such as road maintenance, repair, and safety improvements would be expected to take place between 2014 and 2030. This alternative does not include improvements that would increase roadway capacity or reduce congestion beyond baseline conditions. For these reasons, it does not satisfy the project's purpose to reduce congestion on I-405 between I-5 in Tukwila and SR 169 in Renton.

The No Build Alternative has been evaluated in this discipline report as a comparison for the effects associated with the Build Alternative.

SECTION 3 STUDY APPROACH

What is the study area and how was it determined?

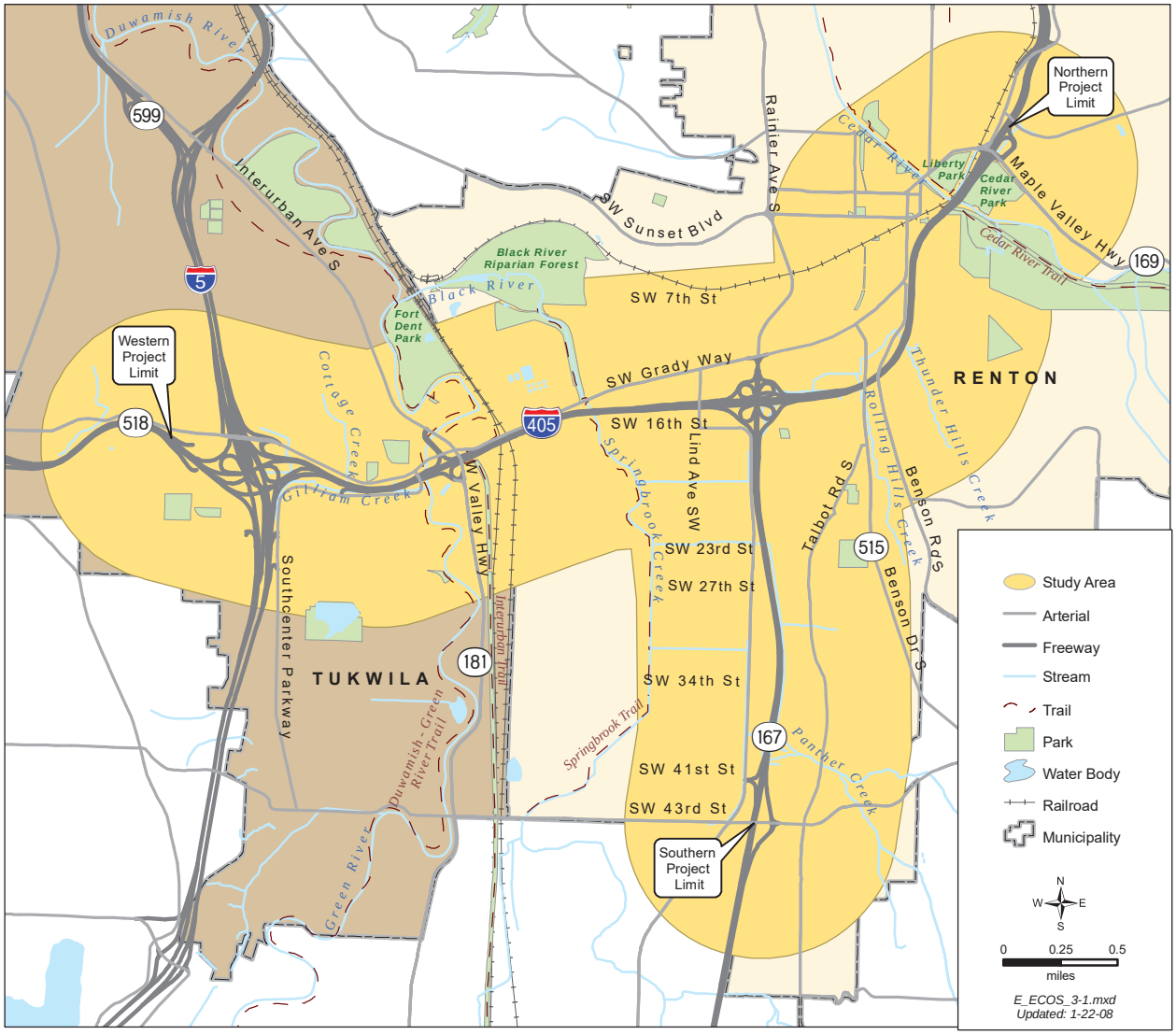
The I-405 Team identified a study area surrounding the project footprint within which aquatic resources, wetlands, and wildlife habitat were evaluated. The study area originates at the anticipated construction footprint of the Tukwila to Renton Project and includes areas where temporary or permanent effects to ecosystem elements from the project may occur. The study area baseline condition includes the built alternative detailed in the previously released *I-405 Renton Nickel Improvement Project, I-5 to SR 169, Environmental Assessment,*[1] which has already been evaluated and environmentally cleared.

For wetlands and aquatic resources, the study area is the portions of I-405, SR 167, local streets, and other WSDOT right-of-way within the project limits. The areas where road widening is proposed are shown on Exhibit 3-1.

The wildlife habitat study area differs from the study area for wetlands and aquatic resources, as the effects to wildlife habitat from the project have the potential to extend further from the project footprint than the effects to wetlands and aquatic resources. For wildlife habitat, the study area extends 0.5 mile from the I-405 and SR 167 centerlines within the project limits, as shown on Exhibit 3-1. In total, the wildlife habitat study area encompasses approximately 5,785 acres.

[1] *WSDOT, 2006a*

Exhibit 3-1: Ecosystems Study Area



What policies or regulations are related to effects on ecosystem elements?

Wetlands, aquatic resources, and wildlife habitat are protected by federal, state, and local laws because of their ecological functions and social value. The laws, regulations, and associated government agencies that govern the ecosystem elements in the study area are detailed in this section.

Wetlands

Federal, state, and local regulations govern development and other activities in or near wetlands. Four agencies have

jurisdiction over wetlands in the Tukwila to Renton Project study area:

- U.S. Army Corps of Engineers (Corps)
- Washington State Department of Ecology (Ecology)
- City of Tukwila (Tukwila)
- City of Renton (Renton)

The federal Clean Water Act (CWA) is the principal piece of legislation that regulates activities that may affect wetlands. The CWA grants both the Corps and a designated state agency (Ecology, in Washington) the authority to regulate certain activities in wetlands and other types of waterbodies. At the local (city and county) level, Washington State's Growth Management Act (GMA) requires that wetlands be protected under local zoning codes or other regulations developed specifically to manage wetlands and other environmentally critical areas.

Aquatic Resources

The main federal regulations or statutes regulating fisheries and aquatic resources in the study area are the CWA Sections 401 (water quality) and 404 (discharge of materials to waters of the U.S., including wetlands), the Endangered Species Act (ESA), the Rivers and Harbors Act (Section 10), and the Coastal Zone Management Act (CZMA). State laws that regulate these resources include the State Hydraulic Code, Water Quality Standards for Surface Waters of the State of Washington, and the Shoreline Management Act (SMA) implemented through the Revised Code of Washington (RCW) (Chapters 77.55, 90.48, and 90.58 RCW, respectively). Local critical areas ordinances (CAOs) and shoreline management plans are also in place to regulate effects to these resources. In general, these regulations protect aquatic habitats and the species, both aquatic and terrestrial, that depend on these areas.

What is the Endangered Species Act (ESA)?

An Act of Congress passed in 1973 that governs how animal and plant species whose populations are dangerously in decline or close to extinction will be protected and recovered.

Wildlife Habitat

Wildlife habitat is primarily regulated by local CAOs and shoreline management plans, with certain species receiving additional protections under state and federal statutes. For example, bald eagles (*Haliaeetus leucocephalus*) are protected by both state (Bald Eagle Protection Rules, Washington

Administrative Code [WAC] 232-12-292) and federal law (Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act). Other federally listed upland plant and animal species are also regulated under the ESA.

How did we collect information on ecosystem elements for this report?

Biologists on the I-405 Team collected existing information on ecosystems resources in the study area by reviewing available literature and previous WSDOT studies; performing internet searches; and conducting interviews with various state, county, and local agencies. The biologists collected additional information on the quantity and quality of baseline ecosystems resources by delineating wetlands, surveying streams and rivers, and identifying vegetation types and wildlife habitat in the study area. Additional general information was collected during a series of interdisciplinary team (IDT) site visits where experts from the I-405 Team in the fields of fisheries, wetlands, wildlife, water resources, road design, drainage design, and permitting reviewed the natural and manmade features located in the study area. The IDT site visits were performed in December of 2004, January of 2005, and July and August of 2006.

What is an interdisciplinary team?

An interdisciplinary team (IDT) is a team of individuals with skills from different disciplines that focus on the same task or project. IDTs provide multiple perspectives in evaluating and avoiding effects to wildlife and wetlands from construction activities.

Wetlands

The I-405 Team conducted a review of existing wetland information based on Ecology's delineation manual[2] prior to proceeding with any wetland fieldwork. We reviewed recent aerial photographs of the study area, the National Wetlands Inventory (NWI),[3] King County Natural Resource Maps,[4] Draft City of Tukwila Wetland/Watercourse Buffer Maps,[5] Renton's CAO,[6] and Washington State Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) database.[7] We obtained additional information about the

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[2] *Ecology, 1997*

[3] *U.S. Department of Interior and USFWS, 1987, 1988*

[4] *King County, 2006*

[5] *Tukwila, 2006*

[6] *Renton, 2005*

[7] *WDFW, 2006*

location of known hydric soils by using maps published by the Natural Resources Conservation Service (NRCS).[8]

The team also reviewed the WSDOT Renton Nickel Improvement Project Wetlands Discipline Report[9] and Wetlands Biology Report[10] to evaluate the wetlands delineated for that project. Since these delineations were completed between February and December 2004 and the reports were issued in February and May of 2005, the wetland delineation and functions information contained in those reports is still relevant for this project.

What is the Cowardin system?

The Cowardin system is used to characterize wetland habitats. The four freshwater wetland habitat types found in the project site are forested, scrub-shrub, emergent, and aquatic bed. The system was adopted by the USFWS for use in federal wetland databases and is recognized by state and local jurisdictions.

Wetland Classification

Wetlands were classified in the study area according to the Cowardin classification system. This system, published in 1979 by a team of U.S. Fish and Wildlife Service (USFWS) scientists led by L.M. Cowardin[11], bases the classification of wetlands on their physical characteristics, such as the general type of vegetation in the wetland (trees, shrubs, grass, etc.). Specifically, the I-405 Team assigned each wetland to one or more of the following Cowardin classes: palustrine emergent, palustrine scrub-shrub, and palustrine forested.

What is an emergent wetland?

An emergent wetland is a wetland comprised of non-woody, herbaceous plants that are rooted in shallow water or saturated soil but have foliage that extends out of the water or above the ground surface.

Wetland Ratings

At the state level, wetlands are categorized by applying the most current version of the Washington State Wetlands Rating System – Western Washington[12], and the Washington State Wetland Rating Form – Western Washington.[13] Ecology developed this system to differentiate wetlands based on their sensitivity to disturbance, their significance in the watershed, their rarity, our ability to replace them, and the beneficial functions they provide to society.

What is a scrub-shrub wetland?

A scrub-shrub wetland is a wetland dominated by woody vegetation less than 20 feet tall. The vegetation may include shrubs, young trees, and trees or shrubs that may be stunted because of environmental conditions.

The Ecology rating system requires the user to collect specific information about the wetland in a step-by-step process. Three major functions are analyzed: flood and erosion control,

What is a forested wetland?

A forested wetland is a wetland characterized by woody vegetation that is 20 feet tall or taller.

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8 *NRCS, 1998*

9 *WSDOT, 2005a*

10 *WSDOT, 2005b*

11 *Cowardin et al., 1979*

12 *Ecology, 2004*

13 *Ecology, 2006*

water quality improvement, and wildlife habitat. Ratings are based on a point system that assigns points to a wetland if it meets specific criteria related to its potential and opportunity to provide certain benefits.

- Category I wetlands represent a unique or rare wetland type, or are more sensitive to disturbance, or are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime.
- Category II wetlands are difficult, though not impossible, to replace, and provide high levels of some functions.
- Category III wetlands have a moderate level of function. They have been disturbed in some ways, and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands.
- Category IV wetlands have the lowest levels of functions and are often heavily disturbed.

Local jurisdictions within the study area, the cities of Renton and Tukwila, have CAOs that allow them to prioritize wetland protection.[14] Some wetlands may be rated differently under these local jurisdictions' rating system as compared to the state system. Differences between the local and state rating systems typically are the result of a different number of tiers in the local jurisdictions' rating systems. For example, Renton and Tukwila rate wetlands on a three tiered system, as opposed to Ecology's four tiered system. Therefore, a wetland may be classified as a Type 3 wetland by a local jurisdiction and a Category IV under the state system; however, they would both be rated as the lowest category of each rating system. Local jurisdictions' CAOs also establish buffers around wetlands to protect the wetlands from encroachment that could affect the wetlands' viability.

Wetland Functions

The functional values of wetlands in the study area were rated according to the most current version of Ecology's Washington State Wetlands Rating System[15] and Washington State Wetland Rating Form.[16] Using Ecology's system, wetlands were rated

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[14] *Renton, 2005; Tukwila, 2006*

[15] *Ecology, 2004*

[16] *Ecology, 2006*

based on a point system that assigns points to a wetland based upon three functional value categories: water quality, hydrologic value, and wildlife habitat. To determine an accurate assessment of a wetland's functional values, function scores were calculated based on entire wetland systems, when applicable, not just the delineated portion of wetlands within the study area. Appendix C includes wetland rating forms for all wetlands in the study area, including the rating forms previously completed for the Renton Nickel Improvement Project.

As part of Ecology's rating system, Ecology determined the hydrogeomorphic classification of wetlands. Each hydrogeomorphic wetland class has specific rating criteria for water quality and hydrologic functions. Habitat functions rating criteria are the same for each of the hydrogeomorphic wetland classes (see Appendix E for details about wetland function values).

What is a wetland hydrogeomorphic classification?

The hydrogeomorphic classification of a wetland is based on the three fundamental factors that influence how wetlands function: geomorphology, water source, and hydrodynamics. Hydrodynamics is the motion and action of water and other liquids and the study thereof. Geomorphology relates to the structure and development of the earth's physical surface.

Aquatic Resources

The I-405 Team worked with local, state, and federal permitting agencies and other resource agencies to identify baseline information on the fisheries and aquatic resources in the study area. Biologists collected additional information on fisheries and aquatic resources in the field by conducting surveys on the streams and rivers in the study area to determine the quantity and quality of existing riparian habitat. During March, April, and May of 2005, biologists surveyed and characterized the in-stream and riparian habitats of 10 streams and rivers where they crossed or flowed near the study area:

- Gilliam Creek
- An unnamed tributary to Gilliam Creek
- Cottage Creek
- The Green River
- Springbrook Creek
- Panther Creek
- Rolling Hills Creek
- An unnamed tributary to Rolling Hills Creek
- Thunder Hills Creek

What is riparian habitat?

Riparian habitat is defined as the aquatic and terrestrial habitat adjacent to streams, lakes, estuaries, or other waterways. Riparian habitat areas are also commonly referred to as stream buffers.

- The Cedar River

Biologists also performed stream surveys during June and July of 2006 on two additional streams located within the study area:

- An unnamed tributary to the Cedar River
- An unnamed tributary to Thunder Hills Creek

Biologists performed the stream surveys to measure and quantify stream characteristics such as length, width, and depth of the waterbody; the quantity and quality of in-stream habitat; the nature and type of riparian vegetation; substrate composition; the presence and size of large woody debris (LWD); and any observed fish use. The stream surveys were conducted from 300 feet upstream and 1,320 feet downstream of the construction footprint for each stream or river. The stream surveys followed specific methodologies, which are summarized in Appendix A. Additional surveys were performed to quantify and qualify large woody debris recruitment for streams in the study are. The results are summarized in Appendix F.

To assess existing fish passage conditions in the study area, the I-405 Team also examined existing culverts. Field work associated with this culvert assessment was completed in July and August of 2006. Based on the results of the fish passage barrier investigation, WSDOT has determined that 10 culverts convey waters of the state, are fish bearing, and will be affected by the project. Of these 10 culverts, WSDOT has determined that seven of them are existing fish passage barriers.[17] The remaining three culverts are presently fish passable. WSDOT will address fish passage at the culverts per the Memorandum of Agreement between WSDOT and WDFW.

Wildlife Habitat

The I-405 Team used land cover geographic information system (GIS) data received from King County, WSDOT, and from the Renton Nickel Improvement Project to identify the types and condition of upland vegetation and habitat resources within the study area.

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[17] *WSDOT, 2007a*

Using aerial photography from 2002[18], an impervious surface GIS dataset,[19] and a land cover GIS dataset,[20] the I-405 Team mapped four land cover types within the study area. The team mapped the land cover types by overlaying the impervious surface and land cover datasets on the aerial photography. The team then edited the land cover dataset based on aerial photo interpretation (at a scale of 1:1000 to 1:4000) and vegetation communities observed during reconnaissance-level surveys of the study area.

Using aerial photo interpretation and information collected from reconnaissance-level surveys, the team verified land cover types identified in the GIS datasets with actual upland vegetation communities found in the study area.

In addition, the I-405 Team collected information on wildlife habitat in the study area by reviewing plant and animal databases, including:

- Washington State Department of Natural Resources (WDNR) Natural Heritage Program (NHP), which details known records of rare plants and rare plant communities[21]
- PHS Program administered by WDFW, which details wildlife PHS information[22]

Additionally, the biologists worked with local regulators and WDFW and USFWS staff to verify the presence of sensitive upland plant and animal species in the study area.

How did we evaluate effects on ecosystem elements?

The project has the potential to affect existing wetlands, aquatic resources, and wildlife habitat. Potential effects to these resources could be either temporary or permanent.

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18 *USGS, 2002*

19 *King County DNR, 2004*

20 *WSDOT, 2003*

21 *WDNR, 2006*

22 *WDFW, 2006*

Wetlands

The I-405 Team evaluated potential effects to wetlands using wetland information gathered in the field, coupled with an overlay of the project footprint. The I-405 Team surveyed and mapped wetlands in the study area based on the boundaries identified by team members in the field. Project engineers reviewed the wetland mapping, compared it to the project footprint, and calculated wetland loss using computer-aided design (CAD) software. In addition to calculating direct (permanent) wetland loss from the project, areas of temporary wetland loss during project construction were also calculated. Effects to wetland buffers were calculated by evaluating the project's temporary and permanent construction effects that will occur within the regulated wetland buffers. If a wetland is wholly filled, it is not considered to incur buffer effects. In addition, the team evaluated each affected wetland to determine whether the extent of the effects will alter the overall function and viability of each wetland.

Aquatic Resources

The I-405 Team evaluated the effects on aquatic resources by reviewing information gathered on aquatic resources in the study area and by assessing project design data and WSDOT construction practices. This information was then reviewed to identify potential changes to the study area's aquatic resources' size and functions during and following project construction.

What are indirect effects?

Indirect effects are effects that occur later in time or are removed in distance from the proposed action, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems.

Similar to wetlands, potential permanent and temporary effects to aquatic resources from the project were calculated by overlaying the project footprint with the streams and rivers in the study area. Using this information, the I-405 Team determined the streams and stream habitat that will likely be affected by the project. Stream habitat that may be lost or gained was also identified. In addition to permanent and temporary effects, indirect effects from the project were also evaluated, including shading from new structures and increases in stormwater flow.

Wildlife Habitat

The I-405 Team evaluated the effects of the project on wildlife habitat by comparing the project's temporary and permanent construction areas to wildlife and vegetation information collected from the WDNR NHP and WDFW PHS Program

databases, from resource agency biologists, and from reconnaissance-level field surveys. A GIS-based land cover analysis, including reconnaissance-level surveys to verify the accuracy of the GIS data, was performed to determine the extent of existing upland vegetation and impervious surface in the study area. Data from these sources were converted into a single land cover GIS map.

The team then overlaid the project footprint with the land cover GIS dataset to quantify the amount of upland vegetation and documented sensitive wildlife species that the project will affect. In addition to direct effects, the team also worked with noise and stormwater experts to determine the extent of any potential effects to wildlife species and habitat as a result of any noise or stormwater effects from the project.

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SECTION 4 BASELINE CONDITIONS

What ecosystem elements exist in the study area?

The ecosystem elements in the Tukwila to Renton Project study area include wetland, aquatic, and wildlife habitats in which specific plants or animals naturally live, grow, and reproduce. These habitats provide the plants and animals in the study area with food, water, shelter, and living space. Habitats found in the study area are typically degraded when compared to natural conditions due to the urban nature of the study area; however, a large variety of plants and animals still occupy the various habitats found therein.

What are the characteristics of ecosystem elements located in the study area?

Wetlands

What wetlands occur in the study area?

Wetland biologists identified 22 wetlands totaling approximately 93.86 acres within the study area for the Tukwila to Renton Project. Of these 22 wetlands, 16 were previously delineated and mapped as part of the Renton Nickel Improvement Project (*Renton Nickel Improvement Project Wetlands Discipline Report*[23] and *Renton Nickel Improvement Project Wetlands Biology Report*[24]). The other six wetlands are newly identified and delineated wetlands specific to the Tukwila to Renton Project study area. Wetlands identified in the study area are typically associated with streams, hillside seeps, or drainage ditches that receive road runoff and convey stormwater.

How are wetlands identified in this report?

Wetlands in this report are described by location in sequence from west to east. Each wetland in the study area was assigned a number based on its location relative to the nearest I-405 or SR 167 milepost (MP), starting with I-405 MP 0.0 at the I-405 and I-5 interchange at the western end of the study area and

[23] *WSDOT, 2005a*

[24] *WSDOT, 2005b*

extending east to MP 4.1 immediately north of the I-405 and SR 169 interchange. The reach of SR 167 within the study area includes SR 167 MP 24.4 to MP 26.3. The wetland number also includes "L" if the wetland is located on the left (north) side of I-405 or the left (west) side of SR 167; "R" if it is located on the right (south) side of I-405 or the right (east) side of SR 167; and "M" if the wetland is located within the I-405 median. For example, a wetland found at the midpoint between MP 2 and MP 3 on the left side of I-405 would be Wetland 2.5L. A summary of the study area wetlands, their associated local and state ratings, and their buffers is presented in Exhibit 4-1.

Exhibit 4-1: Summary of Wetland Ratings in the Study Area

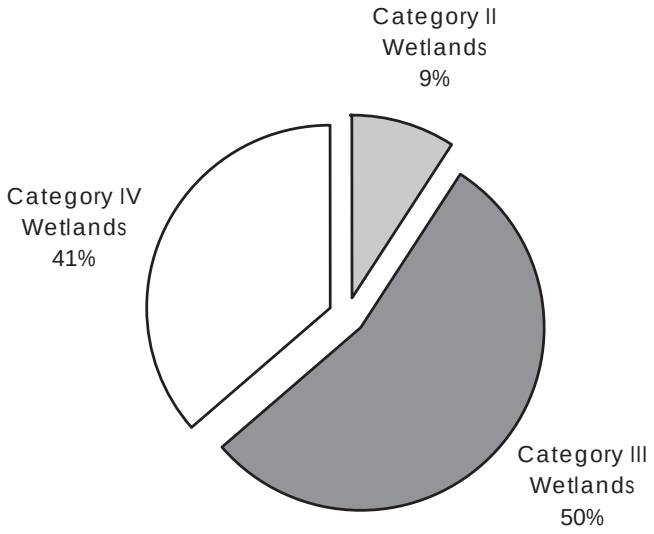
Wetland	Size (acres)	Cowardin Classification	State Rating (Ecology)	Local Rating	Local Jurisdiction Buffer Width (feet)
0.1R	0.05	Emergent	IV	Tukwila – 3	50
0.15R	0.52	Emergent	III	Tukwila – 2	80
0.25M	0.07	Emergent	IV	Tukwila – 3	50
0.3R	1.29	Forested	III	Tukwila – 2	80
0.4L	0.03	Emergent	IV	Tukwila – 3	50
0.6L	0.17	Scrub-shrub	IV	Tukwila – 3	50
0.9R	1.00	Scrub-shrub & Aquatic Bed	III	Tukwila – 2	80
2.2R-A	0.03	Scrub-shrub	IV	Renton – NR	0
2.2R-B	0.03	Scrub-shrub	IV	Renton – NR	0
2.31R	0.01	Emergent	IV	Renton – NR	0
2.6R	0.15	Scrub-shrub & Emergent	III	Renton – 3	25
2.7R	0.25	Scrub-shrub & Emergent	III	Renton – 3	25
2.81L	0.03	Emergent	IV	Renton – NR	0
2.81R	0.07	Scrub-shrub	II	Renton – 3	25
2.82R	0.38	Forested, Scrub-shrub, & Emergent	IV	Renton – 3	25
2.9L	1.05	Scrub-shrub	III	Renton – 3	25
3.0R	0.04	Scrub-shrub & Emergent	III	Renton – NR	0
24.7R	61.00*	Forested, Scrub-shrub, & Emergent	II	Renton – 1	100
25.0L	4.51	Forested	III	Renton – 3	25
25.5L	11.38*	Forested	III	Renton – 3	25
25.7L	0.30	Scrub-shrub	III	Renton – 3	25
25.8L	11.50	Scrub-shrub & Emergent	III	Renton – 3	25
Total	**93.86**				

City of Renton - Ecology Category III or IV wetlands less than 2,200 square feet (0.05 acre) are exempt from regulation under Renton Municipal Code (RMC) Critical Areas Regulations (RMC 4-3-50 B(7)). These wetlands are specified as "NR" in the above exhibit.

* These wetland sizes were approximated, as the majority of these wetlands are located outside of the study area. Only the portions of the wetlands within the study area were surveyed.

The wetland areas presented in Exhibit 4-1 represent the total area of wetlands delineated, not just those areas that will be affected by construction of the roadway improvements. Exhibit 4-2 visually presents the percentages of wetlands in the study area categorized using the Ecology rating system. Ecology's wetland rating field data forms are presented in Appendix C.

Exhibit 4-2: Percentage of Wetlands in the Study Area Categorized by Ecology Rating System



Wetland locations are shown on Exhibits 4-3 through 4-5.

Exhibit 4-3: Tukwila to Renton Project Wetlands Sheet 1



Exhibit 4-4: Tukwila to Renton Project Wetlands Sheet 2

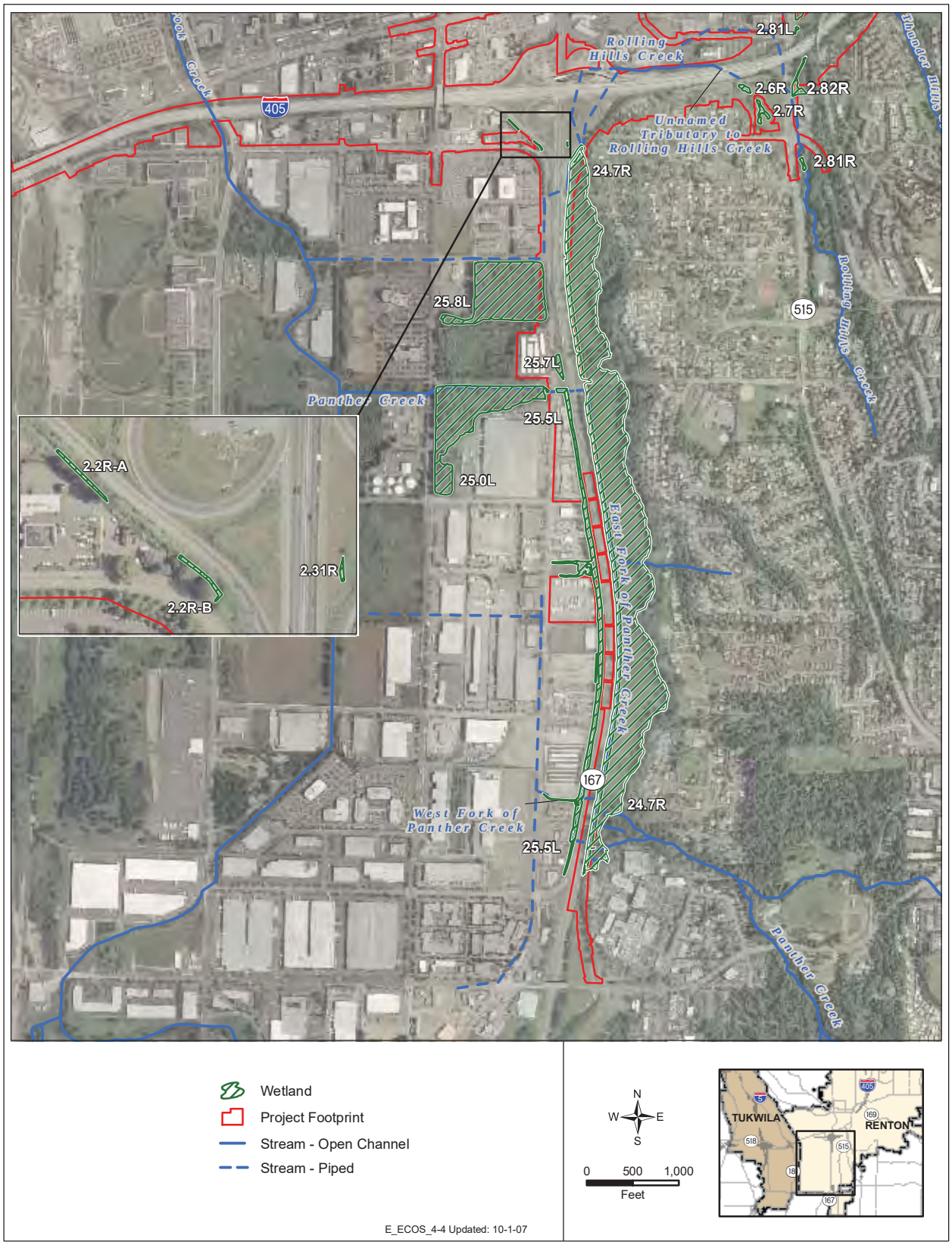


Exhibit 4-5: Tukwila to Renton Project Wetlands Sheet 3



Wetland Classification

Project biologists categorized the 22 wetlands in the study area using Ecology's rating system. Of these, nine wetlands (41 percent) were classified as Category IV; 11 (50 percent) wetlands as Category III; and two (9 percent) wetlands as Category II. No Category I wetlands were identified within the study area, as detailed in Exhibit 4-1.

The local jurisdictions' guidelines were also used to categorize the wetlands in the study area. Of the 22 wetlands in the study area, seven are under Tukwila's jurisdiction and 15 are under Renton's jurisdiction.

According to the Tukwila Environmentally Sensitive Areas code,[25] four of the wetlands (57 percent) that occur within Tukwila's jurisdiction are Type 3 wetlands. The remaining three wetlands (43 percent) are Type 2 wetlands because they are connected to a watercourse that contains salmonids or are larger than 1 acre. There are no Type 1 wetlands in the study area within Tukwila.

Of the 15 wetlands in the study area that occur within Renton, nine (60 percent) are considered to be Category 3 according to the Renton CAO.[26] These wetlands have undergone human-related hydrologic alterations such as ditching or channelization, thus qualifying them as Category 3. One wetland (Wetland 24.7R, associated with Panther Creek) is considered a Category 1 because it is over 10 acres and has three or more vegetation types (one of which is open water). The remaining five wetlands (23 percent) are considered exempt from City of Renton regulations because they are rated under Ecology's classification system as Category III or Category IV and are less than 2,200 square feet (0.05 acre). There are no Category 2 wetlands in the study area within Renton.

The study area spans three different drainage basins or watersheds: Green River, Springbrook Creek, and Cedar River. The Green River basin within the study area contains seven wetlands covering 3.13 acres. The Springbrook Creek basin contains the highest number of wetlands and the largest area of wetlands, with 15 wetlands covering 90.73 acres. No



Emergent Wetland Habitat Type (Wetland 25.8L near SR 167)



Scrub-Shrub Wetland Habitat Type (Wetland 2.7R near I-405)



Forested Wetland Habitat Type (Wetland 25.5L near SR 167)

[25] *Tukwila, 2006*

[26] *Renton, 2005*

What is surface water drainage?

Surface water drainage is the conveyance of any above groundwater source such as a stream or ditch.

What is a surface hydrological connection?

A surface hydrological connection is when a wetland is linked to or associated with the water source of another system via surface water drainage such as a stream or ditch.

What is reed canarygrass?

Reed canarygrass is non-native and invasive mat forming grass that can reach up to 6 feet in height. This plant forms single species stands that displace diverse native wetland plant communities and prevent the re-establishment of native wetland plant communities. Reed canarygrass dominated wetlands support much lower diversity and numbers of native mammals, birds, amphibians, and macro invertebrates than more diverse native wetland plant communities.

wetlands occur in the portion of the Cedar River basin that lies within the study area. Exhibit 4-6 details the drainage basins in the study area.

The wetlands located within each drainage basin are described below.

Green River Basin

There are seven wetlands in the Green River basin within the study area, three Category III wetlands, Wetlands 0.15R, 0.3R, and 0.9R, and four Category IV wetlands, Wetlands 0.1R, 0.25M, 0.4L, and 0.6L, with a combined total area of 3.13 acres. All seven of the wetlands are located adjacent to I-405 or associated I-405 on- and off-ramps, receive water from surface water drainage and groundwater, and discharge to ditches, catch basins, or culverts. In addition, two of the wetlands, Wetlands 0.15R and 0.3R, have surface connections to Gilliam Creek: Wetland 0.6L has a connection to an unnamed tributary to Gilliam Creek, and Wetland 0.4L drains to a culvert associated with Cottage Creek. All the wetlands in the Green River basin discharge to streams, ditches, and pipes that flow to the Green River.

Of the seven wetlands in the Green River basin, five are under 1 acre in size and are dominated by reed canarygrass (*Phalaris arundinacea*). The remaining two wetlands are dominated by willow (*Salix ssp.*), with one wetland also having red alder (*Alnus rubra Bong.*) as a dominant species. The buffer areas associated with all of the wetlands include fill associated with roads and shrub, grass, and herbaceous habitats typically found in highway medians and right-of-way. Himalayan blackberry (*Rubus armeniacus*), a nonnative invasive species, is a common species in the wetland buffer in the study area. A summary of the wetlands located in the Green River basin and their characteristics are shown in Exhibit 4-7.

Exhibit 4-6: Drainage Basin Boundaries within the Study Area

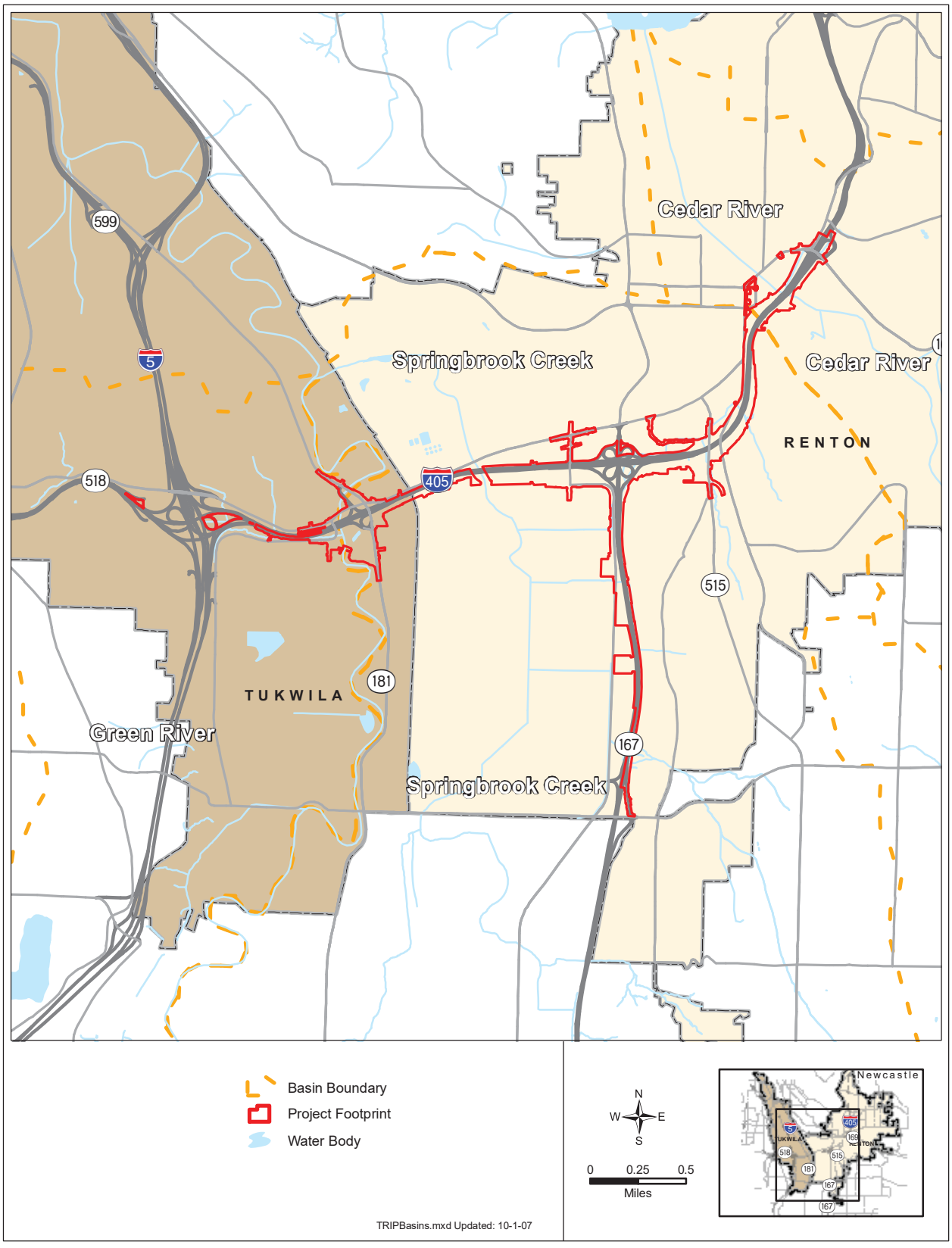


Exhibit 4-7: Summary of Wetlands Located within the Green River Basin

Wetland	Size (acres)	Cowardin Classification	Characteristics
0.1R	0.05	Emergent	Depression dominated by reed canarygrass, soft rush (*Juncus effusus*), and bentgrass (*Agrostis stolonifera*); located in the southeast portion of the I-405/I-5 interchange
0.15R	0.52	Emergent	Depression associated with Gilliam Creek dominated by reed canarygrass; located south of I-5 NB to I-405 NB ramp
0.25M	0.07	Emergent	Maintained swale dominated by reed canarygrass; located between I-405 NB lanes and the HOV on-ramp to I-5 NB
0.3R	1.29	Forested	Ponded depression associated with Gilliam Creek dominated by willow and red cedar (*Thuja plicata*); located south of I-5 NB to I-405 NB ramp and west of 61st Avenue S.
0.4L	0.03	Emergent	Narrow depression that drains into a culvert associated with Cottage Creek dominated by reed canarygrass, common cattail (*Typha latifolia*), and bentgrass; located between I-405 SB lanes and Southcenter Boulevard
0.6L	0.17	Scrub-shrub	Narrow depression that flows to Gilliam Creek via culverts beneath I-405; dominated by reed canarygrass, black cottonwood (*Populus balsamifera ssp. trichocarpa*), willow, and soft rush; located between I-405 SB lanes and Southcenter Boulevard
0.9R	1.00	Aquatic bed and scrub-shrub	Depression with scrub-shrub wetland along perimeter that was the former main channel of the Green River; dominated by willow, located south of the I-405 and SR 181 interchange and east of the Green River
Total	**3.13**		

NB = northbound; SB = southbound

What is an aquatic bed wetland?

An aquatic bed wetland is a wetland with its surface waters dominated by plants that grow and form a continuous vegetated cover principally on or at the surface. Aquatic bed wetlands have vegetation cover that is greater than 80 percent of the wetland.

Springbrook Creek Basin

Two-thirds of the wetland study area is within the Springbrook Creek Basin. This portion of the study area contains the highest number of wetlands—15 wetlands, with a combined area of approximately 90.73 acres. There are eight

Category III wetlands, Wetlands 2.6R, 2.7R, 2.9L, 3.0R, 25.0L, 25.5L, 25.7L, and 25.8L; five Category IV wetlands, Wetlands 2.2R-A, 2.2R-B, 2.31R, 2.81L, and 2.82R; and two Category II wetlands, Wetlands 2.81R and 24.7R. Wetland 24.7R is the largest and the most significant wetland in the study area—the Panther Creek Wetlands.

All 15 of the wetlands are located adjacent to I-405 or associated I-405 on- and off-ramps, receive water from surface water drainage and groundwater, and discharge to ditches, catch basins, culverts, or streams. Two of the wetlands, Wetlands 2.6R and 2.7R, are associated with an unnamed tributary to Rolling Hills Creek. Wetland 2.81R is associated with Rolling Hills Creek, Wetland 2.9L with Thunder Hills Creek, and Wetland 3.0R with an unnamed tributary to Thunder Hills Creek. Wetlands 24.7R, 25.0L, and 25.5L are associated with Panther Creek.

Of the 15 wetlands in the Springbrook Creek basin, two-thirds are under 1 acre in size and are primarily dominated by reed canarygrass. The remaining wetlands typically contain a greater variety of wetland tree and shrub species associated with forested and scrub-shrub wetland classification types, respectively. The buffer areas associated with these wetlands include fill associated with roads and shrub, grass, and herbaceous habitat typically found in highway medians and right-of-way. A summary of the wetlands located in the Springbrook Creek basin and their characteristics are shown in Exhibit 4-8.

Exhibit 4-8: Summary of Wetlands Located within the Springbrook Creek Basin

Wetland	Size (acres)	Cowardin Classification	Characteristics
2.2R-A	0.03	Scrub-shrub	Narrow ditch-shaped wetland dominated by reed canarygrass and Himalayan blackberry; located south of NB I-405 to SB SR 167 on-ramp
2.2R-B	0.03	Scrub-shrub	Narrow ditch-shaped wetland dominated by reed canarygrass and Himalayan blackberry; located south of NB I-405 to SB SR 167 on-ramp
2.31R	0.01	Emergent	Depression dominated by reed canarygrass; located in I-405/SR 167 cloverleaf interchange
2.6R	0.15	Scrub-shrub and Emergent	Riverine wetland associated with the unnamed tributary to Rolling Hills Creek via culverts; dominated by reed canarygrass, common cattail, skunk cabbage (*Lysichitum americanum*), red-osier dogwood (*Cornus stolonifera*), and Himalayan blackberry; located between Smithers Avenue S and Whitworth Avenue S
2.7R	0.25	Scrub-shrub and Emergent	Depression associated with the unnamed tributary to Rolling Hills Creek via culverts; dominated by small-fruited bulrush (*Scirpus microcarpus*), reed canarygrass, common cattail, Pacific willow, and Himalayan blackberry; located between Talbot Road S and Smithers Avenue S
2.81L	0.03	Emergent	Depression dominated by reed canarygrass and Himalayan blackberry; located east of Talbot Road
2.81R	0.07	Scrub-shrub	Riverine wetland associated with Rolling Hills Creek; dominated by salmonberry (*Rubus spectabilis*); located between Talbot Road S and S Puget Drive
2.82R	0.38	Forested, Scrub-shrub, and Emergent	Slope wetland dominated by lady fern, reed canarygrass, red alder, willow, and Himalayan blackberry; located south of I-405 between Talbot and Benson Roads
2.9L	1.05	Scrub-shrub	Depression and seep wetland associated with Thunder Hills Creek during high flow events; dominated by reed canarygrass, common cattail, Pacific willow, and Himalayan blackberry; located between Talbot and Benson Roads
3.0R	0.04	Scrub-shrub and Emergent	Riverine wetland associated with the unnamed tributary to Thunder Hills Creek; dominated by red alder and reed canarygrass; located in a forested area east of northbound I-405 adjacent to the unnamed tributary to Thunder Hills Creek
24.7R	61.00*	Forested, Scrub-shrub, and Emergent	Large wetland complex associated with Panther Creek dominated by reed canarygrass, red-osier dogwood, Himalayan blackberry, willow, red alder, and black cottonwood; located east of SR 167 and south of I-405
25.0L	4.51	Forested	Narrow depression associated with Panther Creek; dominated by reed canarygrass, Himalayan blackberry, Pacific willow, and black cottonwood; located between SR 167 and East Valley Road
25.5L	11.38*	Forested	Large wetland system associated with Panther Creek that also that receives stormwater runoff from several culverts; dominated by reed canarygrass, red-osier dogwood, spirea (*Spiraea douglasii*), and Pacific willow; located between East Valley Road and Lind Avenue SW
25.7L	0.30	Scrub-shrub	Narrow ditch-shaped wetland dominated by reed canarygrass, Himalayan blackberry, and willow; located between SR 167 and East Valley Rd
25.8L	11.50	Scrub-shrub and Emergent	Large wetland system that receives stormwater runoff from several culverts; dominated by reed canarygrass, common cattail, and willow; located between East Valley Road and Lind Avenue SW
TOTAL	**90.73***		

NB = northbound; SB = southbound

* These wetland sizes were approximated, as the majority of the area associated with these wetlands is located outside of the study area. Only the portions of the wetlands within the study area were surveyed.

Cedar River Basin

No wetlands occur in the portion of the Cedar River basin that lies within the study area (see Exhibits 4-5 and 4-6).

Aquatic Resources

The Tukwila to Renton Project is primarily located in the lower Green River subwatershed of the Green/Duwamish River watershed (Water Resource Inventory Area [WRIA] 9) with the northernmost extent of the project extending into the Renton reach of the Cedar River subwatershed in the Lake Washington Watershed (WRIA 8).

The rivers and streams in WRIA 9 that are crossed by I-405 or are otherwise in the vicinity of the study area are Gilliam Creek, an unnamed tributary to Gilliam Creek, Cottage Creek, the Green River, Springbrook Creek, Panther Creek, Rolling Hills Creek, an unnamed tributary to Rolling Hills Creek, Thunder Hills Creek, and an unnamed tributary to Thunder Hills Creek. Two waterbodies in WRIA 8 are within the study area: the Cedar River and an unnamed tributary to the Cedar River. The locations of all of the waterbodies in the vicinity of the study area are shown in Exhibits 4-9, 4-10, and 4-11.

Habitat conditions in these waterbodies within the study area are described in further detail below. For more information on the waterbodies themselves, see the *Water Resources Discipline Report*[27] for this project.

What are watersheds and subwatersheds?

A watershed is the region of land that drains into a specified body of water, such as a river, lake, sea, or ocean. Rain that falls anywhere within a given body of water's watershed will eventually drain into that body of water.

A subwatershed is a smaller watershed located within a larger watershed.

What is a Water Resource Inventory Area (WRIA)?

Washington State is divided into 62 WRIAs for water and aquatic-resource management issues. A WRIA may include more than one watershed. However, the terms "WRIA" and "watershed" are frequently used interchangeably.

[27] *WSDOT, 2007b*

Exhibit 4-9: Aquatic Resource Locations from I-5 / I-405 Interchange to the Green River



Exhibit 4-10: Aquatic Resource Locations Along SR 167

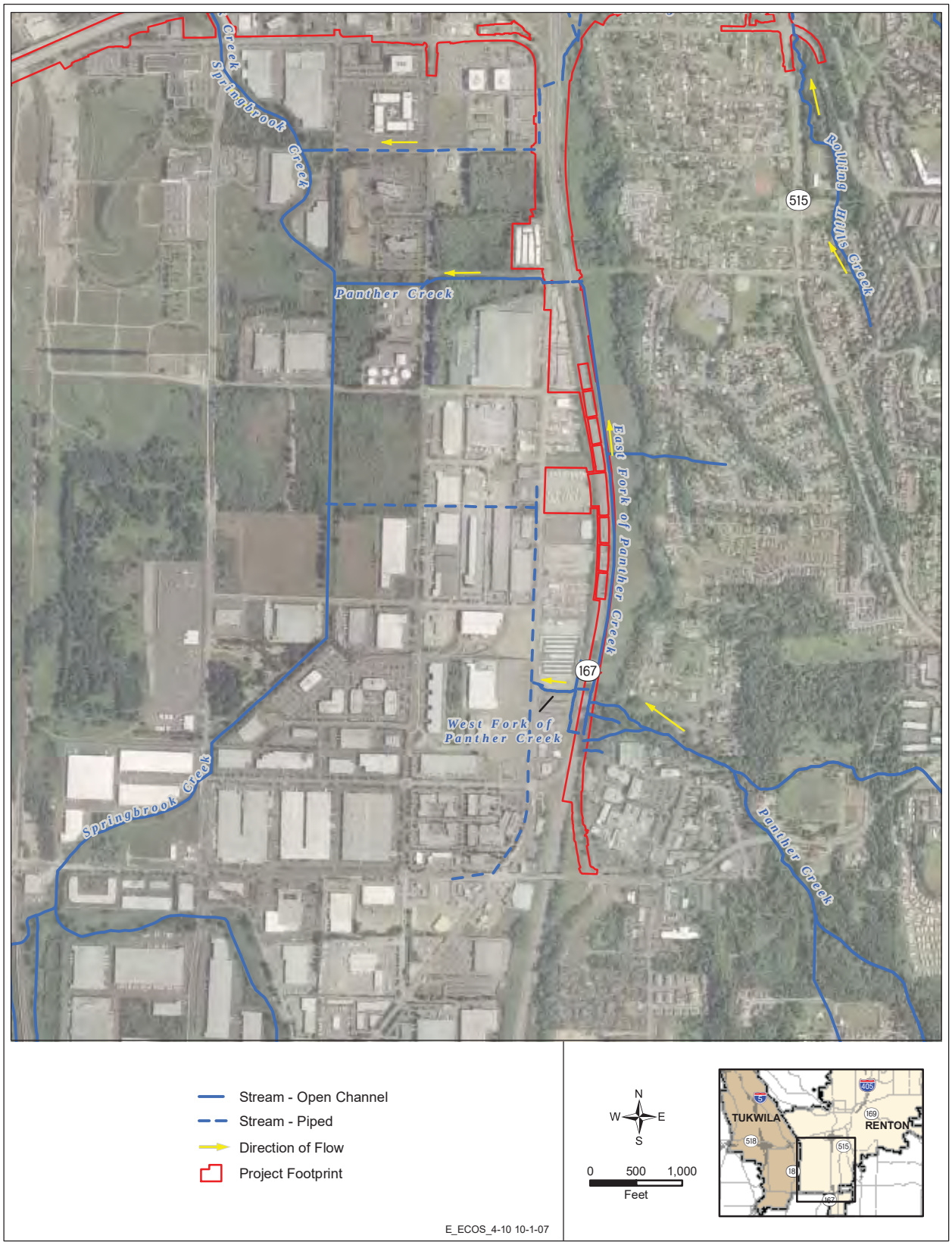
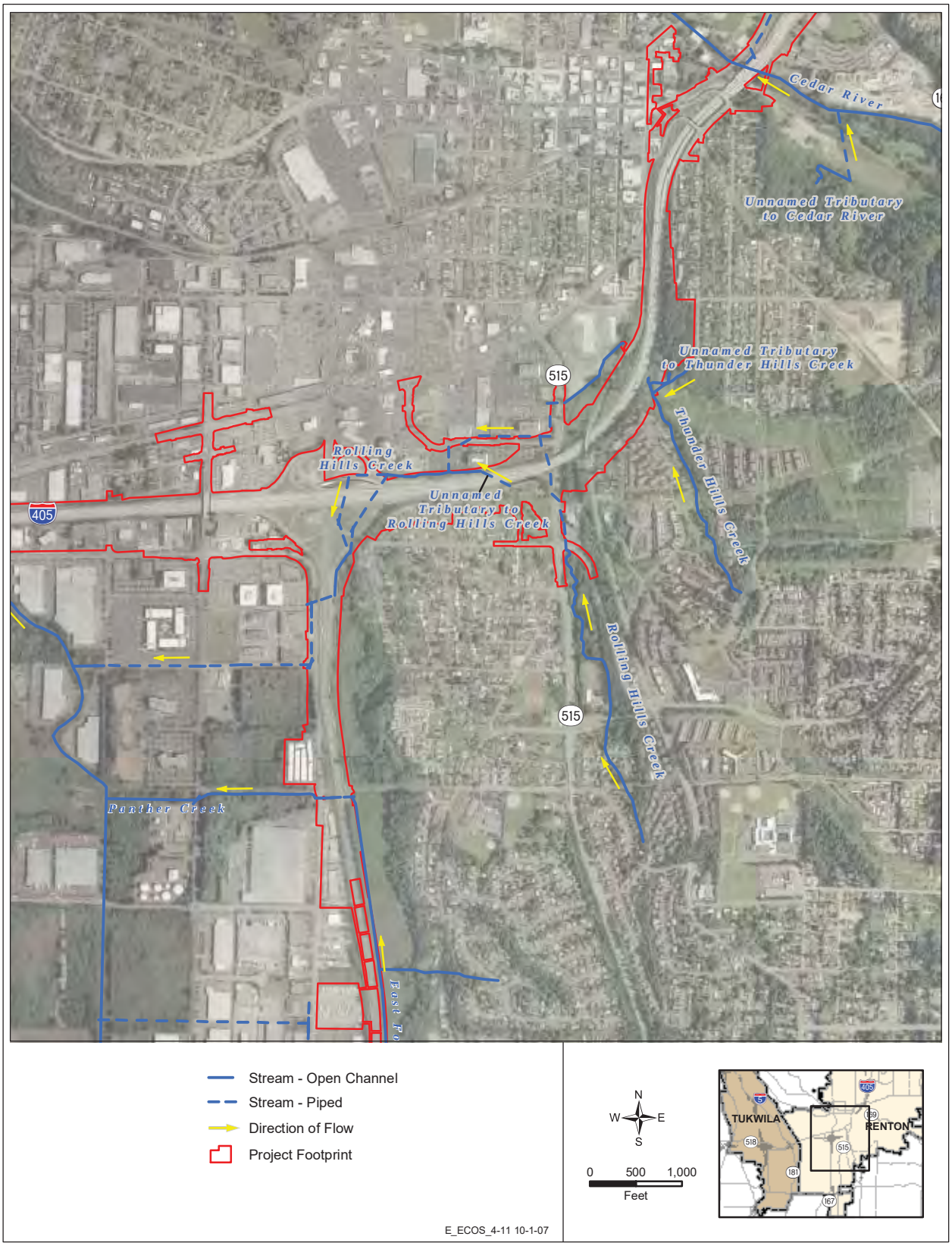


Exhibit 4-11: Aquatic Resource Locations from SR 167/I-405 Interchange to SR 169/I-405 Interchange



In general, the rivers and streams in the Tukwila to Renton Project study area have been highly altered from their natural states to accommodate residential, commercial, and industrial land uses. This alteration has included bank hardening, such as installing riprap and placing streams in concrete channels; reducing or removing streamside vegetation; straightening stream channels; and removing in-stream habitat. These alterations have also resulted in loss of the historic floodplains associated with most of these waterbodies. Significant changes have occurred in the vegetation surrounding these waterbodies. What was once predominantly mature native vegetation has been replaced by a mix of immature native vegetation and non-native invasive plant species.

All native species of salmonids can be found in the study area, including Chinook (*Oncorhynchus tschawytscha*), coho (*O. kisutch*), chum (*O. keta*), pink (*O. gorbuscha*), and sockeye salmon (*O. nerka*); steelhead trout (*O. mykiss*); and sea-run cutthroat trout (*O. clarki clarki*). In addition, bull trout (*Salvelinus confluentus*), Dolly Varden (*S. malma*) (hereafter referenced synonymously with bull trout), and resident cutthroat trout (*O. clarki*) are known to use the waterbodies in the study area. Anadromous salmonid species primarily use the rivers and streams in the study area for upstream and downstream migration and rearing. The study area also contains limited spawning habitat for Chinook, coho, pink, sockeye, and chum salmon, and steelhead. Resident cutthroat trout use the study area for all life stages.

Other fish species likely to be found in the study area include threespine stickleback (*Gasterosteus aculeatus)*, longnose dace (*Rhinichthys cataractae*), speckled dace *(R. osculus)*, longfin smelt (*Spirinchus thaleichthys*), prickly sculpin (*Cottus asper),* riffle sculpin *(C. gulosus)*, reticulated sculpin *(C. perplexus*), shorthead sculpin *(C. confuses*), torrent sculpin *(C. rhotheus*), largescale sucker (*Catostomus macrocheilus*), pacific lamprey *(Lampetra tridentate)*, river lamprey *(L. ayresi)*, and western brook lamprey *(L. richardsoni).*[28] Exhibits 4-12 and 4-13 detail the anadromous and resident fish species known to occur in the individual streams and rivers in the study area.

What are non-native invasive plant species?

Non-native invasive plant species are plant species that do not naturally grow in a particular area, but thrive once introduced. These plants are characteristically adaptable, aggressive, and have a high reproductive capacity. Their vigor, combined with a lack of natural enemies, often leads to a sudden increase in non-native plant populations.

What are anadromous and resident fish?

Anadromous fish are born in freshwater streams, rivers, or lakes, spend their adult phase in the ocean, and return to their natal waters to spawn.

Resident fish spend their entire lives in freshwater systems and do not migrate into saltwater environments.

[28] *Wydoski and Whitney, 2003*

Exhibit 4-12: Anadromous Fish Species Known or Presumed to be in the Study Area[29]

	Fish Species								
	Chinook Salmon	Coho Salmon	Pink Salmon	Sockeye Salmon	Chum Salmon	Steelhead Trout	Bull Trout	Sea-Run Cutthroat	Pacific Lamprey
Gilliam Creek	√	√				√		√	√
Cottage Creek									
Unnamed Tributary to Gilliam Creek									
Green River	√	√	√	√	√	√	√	√	√
Springbrook Creek	√	√				√			
Panther Creek	√	√				√			
Rolling Hills Creek									
Unnamed Tributary to Rolling Hills Creek									
Thunder Hills Creek									
Unnamed Tributary to Thunder Hills Creek									
Cedar River	√	√		√		√	√		
Unnamed Tributary to Cedar River									

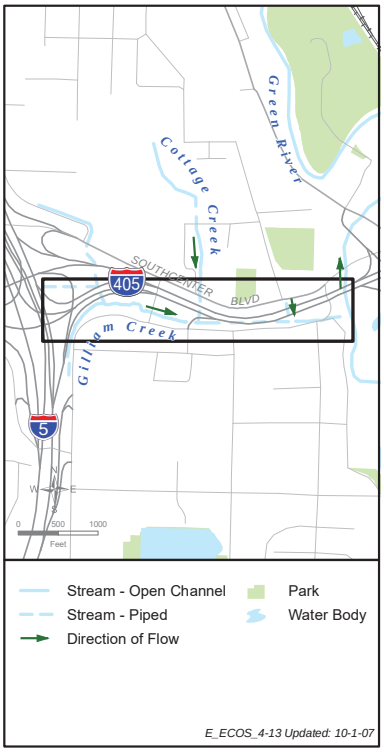
[29] *Anchor, 2005; Kerwin, J. 2001; Kerwin et all, 2000; WDFW, 2006; WDFW 2004; Wydoski and Whitney 2003*

Exhibit 4-13: Resident Fish Species Known or Presumed to be in the Study Area[30]

	Fish Species								
	Cutthroat Trout	River Lamprey	Western Brook Lamprey	Sculpin	Longnose Dace	Speckled Dace	Largescale Sucker	Threespine Stickleback	Longfin Smelt
Gilliam Creek	√	√	√	√	√	√	√	√	
Cottage Creek	√		√	√	√	√	√	√	
Unnamed Tributary to Gilliam Creek									
Green River	√	√	√	√		√	√	√	
Springbrook Creek	√		√	√		√	√	√	
Panther Creek	√		√	√	√	√	√	√	
Rolling Hills Creek	√		√	√	√	√		√	
Unnamed Tributary to Rolling Hills Creek				√				√	
Thunder Hills Creek	√		√	√				√	
Unnamed Tributary to Thunder Hills Creek									
Cedar River	√	√	√	√		√	√	√	√
Unnamed Tributary to Cedar River	√			√				√	

[30] *Anchor, 2005; Kerwin, J. 2001; Kerwin et all, 2000; WDFW, 2006; WDFW 2004; Wydoski and Whitney 2003*

Exhibit 4-14: Gilliam Creek





Gilliam Creek



Cottage Creek

Other native species found in the study area include several species of crayfish, frogs, salamanders, freshwater clams, and freshwater mussels.

The habitat characteristics for the waterbodies listed below are specific to the areas of the waterbodies located within the proximity of the study area. Summaries of the stream surveys performed for this project can be found in Appendix B.

Gilliam Creek

Gilliam Creek flows easterly, parallel to I-405, between I-405 and Tukwila Parkway, as depicted in Exhibit 4-14. Beginning on the east side of the I-5 right-of-way, Gilliam Creek alternately flows between open channel and culverted sections to its confluence with the Green River, through a 108-inch flap gate owned by the City of Tukwila that is located at approximately Green River mile (RM) 12.7.[31] The flap gate and an associated splash pad on the downstream end of the culvert are complete barriers to fish passage when the flap gate is closed.

Gilliam Creek has been highly modified throughout the study area. The creek is primarily contained within a straight, concrete-lined, incised, trapezoidal channel, and contains little in-stream structure. It has a narrow stream buffer with some native coniferous and deciduous trees and shrubs, but the stream buffer is dominated by non-native plant species including Himalayan blackberry, Scot's broom (*Cytisus scoparius),* and reed canarygrass. Two wetlands (Wetlands 0.15R and 0.3R – each with an Ecology wetland rating of III and a City of Tukwila rating of 2) associated with Gilliam Creek provide limited refugia for fish during high flows and provide rearing habitat for juvenile salmonids.

The Gilliam Creek watershed contains a high percentage of impervious surface due to the surrounding commercial, residential, and industrial land uses. Because of this heavily urbanized condition, peak runoff flow rates are high and the runoff from this area contains relatively high concentrations of a variety of pollutants.[32]

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[31] *Anchor, 2005*

[32] *Tukwila, 2001*

Cottage Creek

Cottage Creek is a tributary to Gilliam Creek located to the north of I-405 in the city of Tukwila. Exhibit 4-15 is a map of Cottage Creek. The creek flows southerly from the hillside, under Southcenter Boulevard via a culvert, daylights for approximately 12 linear feet immediately north of I-405, flows under I-405 via another culvert, and confluences with Gilliam Creek via a stormwater outfall.

In total, 80 square feet of Cottage Creek are located in the I-405 right-of-way. The upstream end of Cottage Creek (north of Southcenter Boulevard) is located approximately 500 feet to the north of the portion of Cottage Creek in the I-405 right-of-way. Immediately upstream of the section of Cottage Creek in the I-405 right-of-way, a natural outcrop exists that prevents fish passage.[33]

Unnamed Tributary to Gilliam Creek

An unnamed tributary to Gilliam Creek flows into Gilliam Creek via a culvert immediately east of where Gilliam Creek daylights before its confluence with the Green River. Exhibit 4-16 is a map of the unnamed tributary to Gilliam Creek. This tributary has no open channel at its confluence with Gilliam Creek. The only other portion of this stream located in the study area is an approximately 50-foot section that daylights into, and flows through, a small riparian wetland (Wetland 0.6L) immediately north of I-405. In this area, the stream has a small stream buffer and little in-stream habitat. No additional open channel habitat associated with this tributary is located within 0.25 mile of the project footprint.

Green River

The Green River flows under I-405, Southcenter Boulevard, the I-405 southbound off-ramp to SR 181, and SR 181 between approximately RMs 12.7 and 12.8. The Green River in the study area is depicted in Exhibit 4-17. In this area, the Green River is completely contained within a dike system maintained and regulated by the Green River Flood Control Zone District. Flow levels in this reach of the Green River are primarily dictated by controlled releases from the Howard

Exhibit 4-15: Cottage Creek

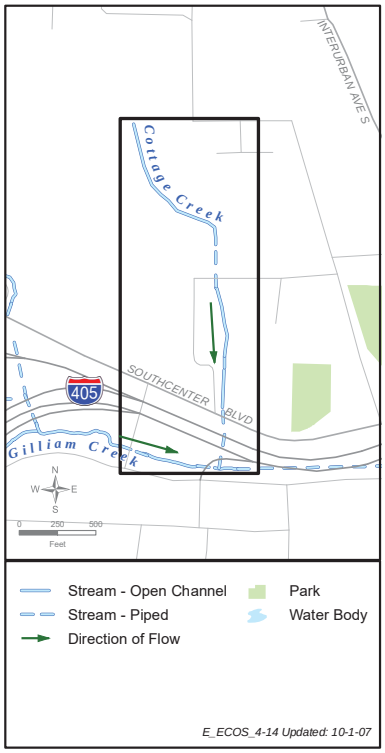
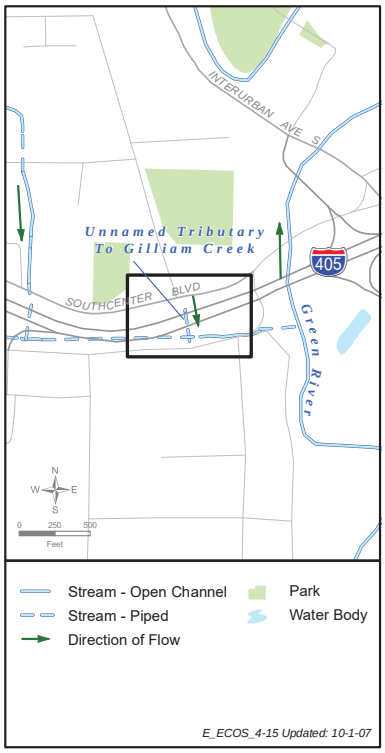


Exhibit 4-16: Unnamed Tributary to Gilliam Creek

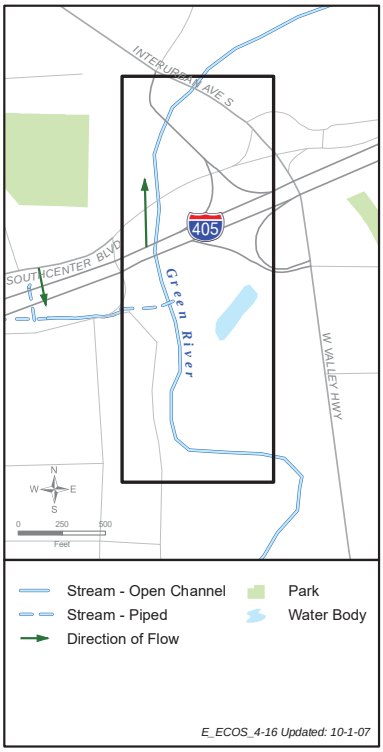


[33] *WSDOT, 2007a*

What does it mean when a stream daylights?

Daylighting of a stream occurs when the stream flows from a below ground area into an above-ground open channel.

Exhibit 4-17: Green River



What is Ecology's 2004 303(d) list?

Ecology's 2004 303(d) list is a list of waterbodies in Washington State that exceed water quality criteria. The development of Ecology's 2004 303(d) list is mandated by the Clean Water Act.

Hansen Dam (HHD), although the river is also tidally influenced in the study area.

Riparian vegetation within this reach of the Green River consists primarily of non-native invasive plant species including Himalayan blackberry, reed canarygrass, and Scot's broom, though some native deciduous and coniferous trees and shrubs are found infrequently along the river banks. The Green River in the study area lacks in-stream habitat features including LWD and, due to the composition of the riparian vegetation, it also lacks opportunities for future woody debris recruitment. The mainstem riparian habitat in the lower Green River subwatershed is not in good condition and is not considered to be functioning properly based on the National Marine Fisheries Service (NMFS) criteria.[34] Also, the Green River is listed on Ecology's 2004 303(d) list in this area for temperature, fecal coliform, and dissolved oxygen (DO).

Several historic events and land use trends have combined to have a profound effect on the hydrology of the Green River. These include five large engineering projects:

- Construction of flood control levees in the late 1800s
- Diversion of the White River in 1911
- Construction of Tacoma Water's Headworks Diversion Dam in 1911
- Diversion of the Cedar/Black River in 1916
- Construction of the HHD in 1962

More recently, urban development in the lower basin has resulted in substantial increases in stormwater runoff from small tributary streams. This, in turn, has contributed to larger and more frequent peak flows during the winter and reduced recharge of shallow aquifers that formerly sustained flows during the late summer and fall. The overall effect of development on flows in the lower mainstem of the Green River from approximately RM 11 to RM 42 is difficult to discern due to the overwhelming changes in flow resulting from the historic diversions and channelization, and the construction of the HHD.[35]

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[34] *NMFS, 1996*

[35] *Kerwin and Nelson, 2000*

The lower Green River is used by all native salmonids for upstream and downstream migration and rearing. Chinook, coho, pink, sockeye, and chum salmon and steelhead trout are known to spawn in this reach of the Green River, though spawning habitat is limited.[36] Pacific and river lamprey are also present in the Green River, but little information is available on their present status.[37]

What are levees and revetments?

Levees are raised embankments along the edge of a river channel, often constructed by humans living in low-lying areas as protection against flooding.

Revetments are facings of stone, concrete, or even such materials as tires, placed on a riverbank or levee to protect it from erosion.

Springbrook Creek

Springbrook Creek is located east of the mainstem Green River, within the city of Renton. It flows into the Black River through the Black River Pump Station (BRPS), and subsequently into the Green River approximately 1,000 feet downstream of the BRPS. Exhibit 4-18 depicts Springbrook Creek.

Riparian vegetation surrounding Springbrook Creek is a mixture of alder (*Alnus spp*.), willow, Himalayan blackberry, and sedges. Conifers are almost non-existent and, in those areas where shade is absent, reed canarygrass is abundant. Within this creek, riparian habitat does not meet the NMFS criteria for properly functioning habitat and is a limiting factor to natural salmonid production.[38]



Green River upstream of study area

Springbrook Creek is listed on Ecology's 2004 303(d) List for fecal coliform and DO.

Though not in the immediate study area, the BRPS is a significant fish passage barrier to upstream and downstream fish migration. The purposes of this structure are to control outflows from the Black River, prevent flows on the Green River from backing up into the Black River/Springbrook Creek floodplain during floods, and to provide a means of releasing flood flows from the Black River/Springbrook Creek system when the Green River is at a high river stage. The BRPS is currently operated and maintained by King County Surface Water Management.[39]



Springbrook Creek

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36 *Kerwin and Nelson, 2000*

37 *U.S. Army Corps of Engineers, 2001*

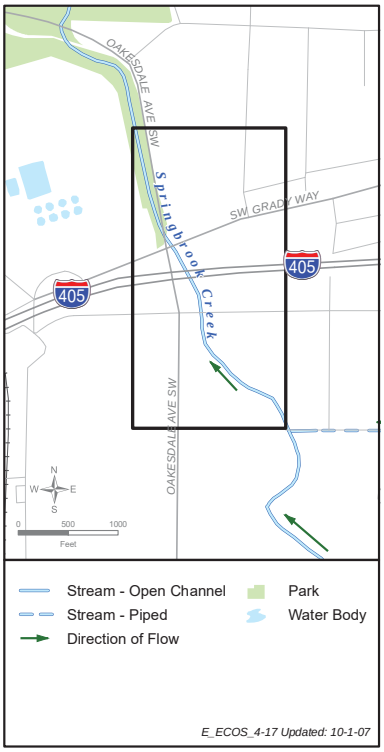
38 *Kerwin and Nelson, 2000*

39 *Kerwin and Nelson, 2000*

What is peak flow versus base flow?

Peak flow refers to a specific period of time when the discharge of a stream or river is at its highest point. Base flow refers to the volume of flow in a stream or river during dry conditions, as opposed to conditions influenced by storm runoff.

Exhibit 4-18: Springbrook Creek



The facility is not equipped to handle downstream migrating adult steelhead trout or Chinook salmon. Adult steelhead and Chinook salmon that move upstream past the BRPS cannot exit the Springbrook Creek subbasin, as portions of the downstream fish passage facility contain entrance fish ports and associated piping that are undersized for these species.[40] Once there, many adult Chinook are believed to experience high levels of stress or be killed outright prior to successful spawning.[41]

The BRPS also has a downstream passage facility that is operated from early April to mid-June each year, for approximately 8 hours per day, Monday through Friday. Fish attempting to move downstream outside of that operational window are either prevented from exiting the Springbrook system or must pass through the unscreened large pumps (if operational). Juvenile Chinook emerge and begin moving downstream in the Middle Green River system as early as February.[42] Consequently, early downstream migrants would be prevented from exiting the Springbrook system. The existing screens and their placement at the BRPS do not meet current NMFS screening criteria.[43]

Despite the fish passage limitations of the BRPS, Springbrook Creek is used by coho and Chinook salmon and steelhead trout for spawning and rearing.[44]

Panther Creek and the Panther Creek Wetlands

Panther Creek enters the study area on the east side of SR 167 immediately north of the SW 41st Street interchange. At SR 167, Panther Creek splits into two forks, hereafter referred to as the west and east forks of Panther Creek. Exhibit 4-19 depicts Panther Creek and the locations of the east and west forks. The flow in Panther Creek past the forks is divided into the east and west forks in an approximately 2/3 to 1/3 ratio, respectively.[45]

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40 *Kerwin and Nelson, 2000*

41 *Kerwin and Nelson, 2000*

42 *Jeanes and Hilgert, 2000*

43 *Kerwin and Nelson, 2000*

44 *Kerwin and Nelson, 2000*

45 *Masters, 2005*

The west fork of Panther Creek flows underneath SR 167 via two culverts. These two culverts are barriers to fish passage due to the water velocity in the culverts during high water flows.[46] Once the creek has crossed SR 167, it flows into an open channel between two businesses and ultimately into a system of culverts beginning at East Valley Road. This system of culverts eventually outlets to Springbrook Creek. The east fork of Panther Creek flows northerly along the east side of SR 167 through the Panther Creek Wetlands for approximately 1 mile. It then enters a fish ladder owned by the City of Renton.

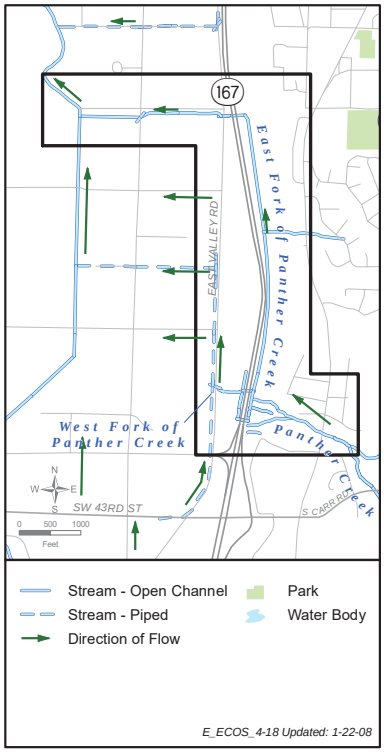
At the end of the fish ladder, Panther Creek flows into a culvert under SR 167, daylights between SR 167 and East Valley Road, and enters another culvert that directs the flow under East Valley Road. On the west side of East Valley Road, Panther Creek outlets into a large wetland complex and maintains a distinct channel through the wetland complex. As with the west fork, the east fork of Panther Creek ultimately flows into Springbrook Creek.

The reach of Panther Creek immediately upstream of the east and west forks flows through a largely native, deciduous tree-dominated forest that contains some invasive species, primarily Himalayan blackberry. The stream channel in this location is connected with its floodplain (not incised) and has a large stream buffer, but has a limited amount of in-stream cover.

The northerly flowing portion of the west fork of Panther Creek flows through a large patch of reed canarygrass with no other vegetation apparent. When this fork turns westerly, it flows into and through a managed bioswale until it flows into a city stormwater system under East Valley Road. The bioswale is completely vegetated with upland landscaping grasses. The west fork of Panther Creek is entirely channelized, has no native riparian canopy, and completely lacks in-stream structure.

The east fork of Panther Creek flows for approximately 400 feet to where it flows into a patch of reed canarygrass that is part of the Panther Creek wetland complex. Once the creek enters the patch of reed canarygrass, the creek's main channel

Exhibit 4-19: Panther Creek



What is a fish ladder?

Fish ladders are structures on or around artificial barriers (such as dams and weirs) to facilitate fishes' natural migration. Most fish ladders enable fish to pass around the barriers by swimming and leaping up a series of relatively low steps (hence the term ladder) into the waters on the other side.



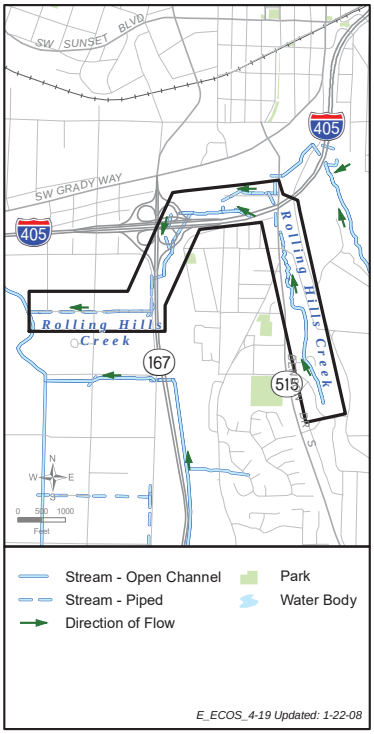
Panther Creek fish ladder

[46] *WSDOT, 2007a*

What is refugia habitat?

Refugia habitat is an area of a stream that provides shelter or safety for aquatic species.

Exhibit 4-20: Rolling Hills Creek





Rolling Hills Creek typical reach

is no longer visible. Flow continues through the reed canarygrass patch for approximately 500 feet to where the main channel of Panther Creek becomes visible once again. The east fork of Panther Creek then flows immediately alongside SR 167 in a defined channel with a narrow, deciduous canopy to where it enters the fish ladder.

After flowing into the fish ladder and under SR 167 and East Valley Road, Panther Creek enters a wetland (Wetland 25.0L) containing forested vegetation. Panther Creek continues through this wetland to where it flows into Springbrook Creek. The east fork of Panther Creek has a limited stream buffer and canopy and contains limited in-stream habitat. Panther Creek is expected to be used by coho and Chinook salmon and cutthroat and steelhead trout as rearing habitat because of its association with Springbrook Creek. There is little salmonid spawning habitat in Panther Creek throughout most of the study area; however, there may be a small amount of suitable coho salmon, steelhead, or cutthroat trout spawning habitat within the study area east (upstream) of where Panther Creek divides into the east and west forks.

There are three significant wetland complexes associated with Panther Creek: the Panther Creek Wetland (Wetland 24.7R), and two associated wetlands located along the west side of SR 167 (Wetlands 25.0L and 25.5L). Juvenile salmonids, especially coho salmon, use wetlands as rearing and refugia habitat. Due to the size and complexity of these wetlands, they provide the largest contiguous area of wetland salmonid rearing and refugia habitat in the study area.

Rolling Hills Creek and an Unnamed Tributary to Rolling Hills Creek

The headwaters of Rolling Hills Creek flow from the Rolling Hills subbasin located south of I-405. From its headwaters, Rolling Hills Creek eventually flows northward between Talbot Road and S Puget Drive and into the study area approximately 400 feet south of the Talbot Road, S Puget Drive, and South 15th Street intersection. From this intersection, Rolling Hills Creek flows through a series of culverts under several commercial parking lots to where it ultimately daylights on the north side of I-405 into an open channel between I-405 and a parking lot associated with several local businesses including the Renton Cinema 8 and Triton Tower One. The creek then flows southerly in a culvert

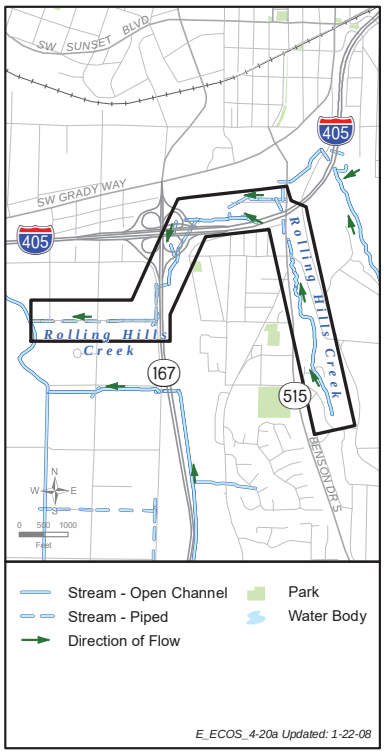
under the I-405/SR 167 Interchange, into an open channel that runs parallel to the NB SR 167 ramp to NB I-405 for approximately 520 feet, under SR 167 and local streets, that eventually outlets to Springbrook Creek. During high flow events, a portion of the flow from the section of Rolling Hills Creek between I-405 and the parking lot associated with the Renton Cinema 8 and Triton Tower One is directed into an overflow culvert that also flows southerly under the I-405/SR 167 Interchange. The culverts under the I-405/SR 167 Interchange act as fish passage barriers due to the water velocity in the culverts during high water flows.[47] Exhibit 4-20 depicts Rolling Hills Creek.



Rolling Hills Tributary at confluence with Rolling Hills Creek

An unnamed tributary to Rolling Hills Creek originates from a wetland (Wetland 2.6R) located within the powerline corridor on the hillside to the south of I-405. Based on its configuration, this wetland was once likely the historic main channel of Rolling Hills Creek. The unnamed tributary daylights from a culvert on the north side of I-405 behind the Triton Tower One building and flows westerly to where it confluences with Rolling Hills Creek in the location where Rolling Hills Creek daylights between I-405 and the parking lot associated with the Renton Cinema 8 and Triton Tower One. Exhibit 4-21 depicts the unnamed tributary to Rolling Hills Creek.

Exhibit 4-21: Unnamed Tributary to Rolling Hills Creek



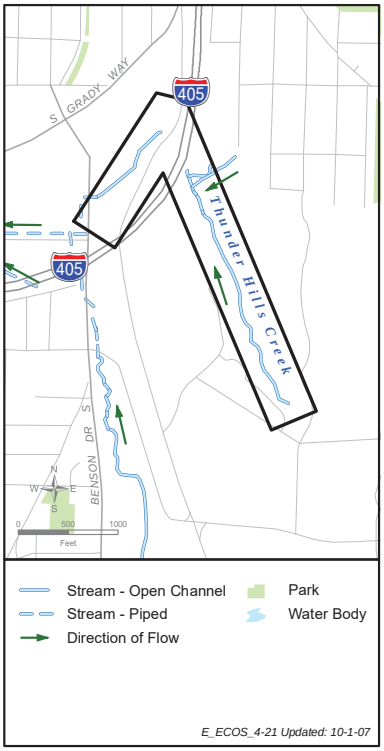
Rolling Hills Creek has been highly modified throughout the study area. The upstream reaches (south of I-405) of Rolling Hills Creek have a mature deciduous riparian canopy with a greater diversity of native plant species than the downstream reaches; however, Himalayan blackberry and other non-native plant species are still prevalent throughout the upper reaches. Rolling Hills Creek's upstream reach has a larger floodplain than the lower reach, but still has only limited opportunity to meander due to the width of the floodplain. In addition, two concrete dams are located in the upstream reach within the study area. The first dam spans the entire channel width and is located approximately 40 feet upstream of the Talbot Road, S Puget Drive, and S 15th Street intersection. The second dam is located approximately 300 feet upstream of the first dam. The second dam is derelict, has been breached to allow water flow, and does not impede ordinary streamflow.

[47] *WSDOT, 2007a*



Upper Rolling Hills Creek notch in historical dam

Exhibit 4-22: Thunder Hills Creek





Thunder Hills Creek downstream flume west of I-405

After crossing under the I-405/SR 167 Interchange (downstream of the streams' confluence), Rolling Hills Creek flows into a deeply incised channel until it enters the culvert under SR 167. Throughout these downstream areas, the creek and its unnamed tributary have little to no in-stream structure, and narrow stream buffers comprised of immature deciduous trees, shrubs, and non-native plant species including Himalayan blackberry and reed canarygrass.

No anadromous fish species are reported to occur in Rolling Hills Creek or its unnamed tributary.[48]

Thunder Hills Creek

The headwaters of Thunder Hills Creek are located to the southeast of I-405. Exhibit 4-22 depicts Thunder Hills Creek. Upstream of I-405, Thunder Hills Creek is contained in an incised channel with an intact stream buffer along the east side of the creek and a buffer of varying widths (from 0 to approximately 20 feet wide) along the west side of the creek. At the downstream end of this upper section, Thunder Hills Creek flows under I-405 and daylights into a concrete outfall located directly behind Sam's Club. The culvert under I-405 acts as a complete upstream fish passage barrier due to the water velocity in the culvert during high water flows.[49]

After daylighting at the outfall, Thunder Hills Creek confluences with water flowing from a historic, now abandoned coal mine. There is a noticeably sulfurous smell from the water originating from the coal mine at this confluence.[50] From the confluence, the flow from Thunder Hills Creek and the coal mine runoff enters a three-sided concrete flume and flows along the southeast edge of the Sam's Club parking lot. The flume outlets into a wetland complex immediately east of Talbot Road S and north of I-405. The creek then flows west under Talbot Road, into a series of culverts and under several parking lots to where it daylights in the location where Rolling Hills Creek daylights between I-405 and a parking lot.

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48 *King County DNR, 2004*

49 *WSDOT, 2007a*

50 *Anchor, 2005*

As stated above, the lower portion of Thunder Hills Creek flows through a three-sided concrete flume and has no natural channel. There is almost no vegetative cover over the stream. Most of the stream bed is concrete, with sporadic patches of gravel located along the length of the stream.

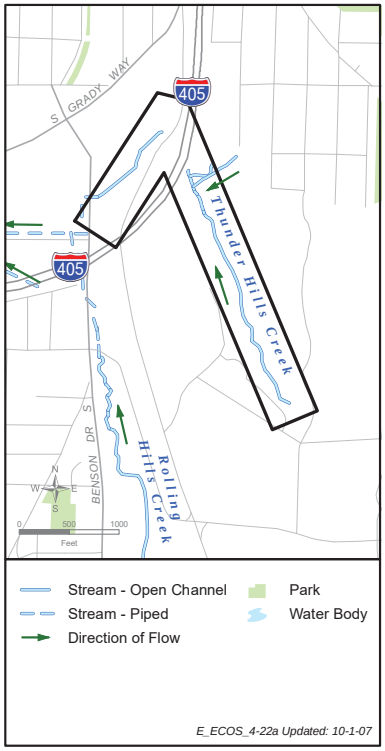


Thunder Hills Creek Tributary

Unnamed Tributary to Thunder Hills Creek

The headwaters of the unnamed tributary to Thunder Hills Creek are located to the east of I-405 on the southwestern slope of Renton Hill. Exhibit 4-23 depicts the unnamed tributary to Thunder Hills Creek. The unnamed tributary to Thunder Hills Creek has year-round low flow originating from neighborhood storm drains, culverts, hillside seeps, and several seasonal drainages located along the hillside that drain during rain events. The main channel of the unnamed tributary to Thunder Hills Creek flows east to west off the hillside for 1,200 feet, enters a low gradient wetland, turns south, parallels I-405 for approximately 400 feet, and then flows west again for 300 feet down a steep gradient under an existing powerline corridor. Prior to the confluence with Thunder Hills Creek, the unnamed tributary sheet flows down a very steep sandstone outcrop. The sandstone outcrop acts as a complete natural barrier to fish passage.

Exhibit 4-23: Unnamed Tributary to Thunder Hills Creek



No anadromous fish species are expected to occur in the unnamed tributary to Thunder Hills Creek due to the sandstone outcrop. In addition, it is unlikely that resident fish would be found in the unnamed tributary to Thunder Hills Creek due to low flows and infiltration that result in temporal dewatering and associated isolation of significant portions of the creek during summer months.

Cedar River

The Cedar River flows under I-405 at approximately RM 1.6. Exhibit 4-24 depicts the Cedar River. The reach of the Cedar River located in the study area is known as the Renton Reach and it was created when the Cedar River was redirected into Lake Washington in 1912. The Renton Reach is entirely artificial, is completely constrained between levees and revetments, and was regularly dredged to prevent flooding (from its completion in 1912 until the mid-1970s). Portions of this reach were again dredged in 1999, for the first time since

What is a riffle?

A shallow area of a stream or river in which water flows rapidly over a rocky or gravelly stream bed.

Exhibit 4-24: Cedar River



the mid-1970s. This reach is essentially one long riffle with little habitat complexity.[51]

The Renton Reach is affected by urban and industrial uses along the river that contribute to local water quality problems, eliminate the potential for connection with a natural floodplain or the establishment of a riparian corridor, and prohibit the production of significant LWD accumulations in the channel. This reach is the depositional area for many of the river's sediments, and as a result, the substrates tend to have higher levels of fine sediments than upstream substrates.[52]

Riparian vegetation is virtually absent within the Renton Reach of the Cedar River and many areas along the river have been developed up to the edge of the dike system. In those places, virtually no riparian vegetation is present. Where development is set back from the Cedar River, vegetation consists primarily of non-native invasive plant species including Himalayan blackberry, reed canarygrass, and Scot's broom, though some native deciduous and coniferous trees and shrubs are infrequently found along the banks.[53]

The Cedar River is on Ecology's 2004 303(d) List for fecal coliform and temperature.

Anadromous fish use in the Renton Reach of the Cedar River includes spawning, upstream and downstream migration, and some limited rearing by sockeye, Chinook, and coho salmon and steelhead trout. The Cedar River also has known uses by bull trout, which likely use the Renton Reach for upstream and downstream migration.[54]



Cedar River downstream from I-405

51 *King County Department of Public Works, 1993*

52 *King County Department of Public Works, 1993*

53 *Kerwin, 2001*

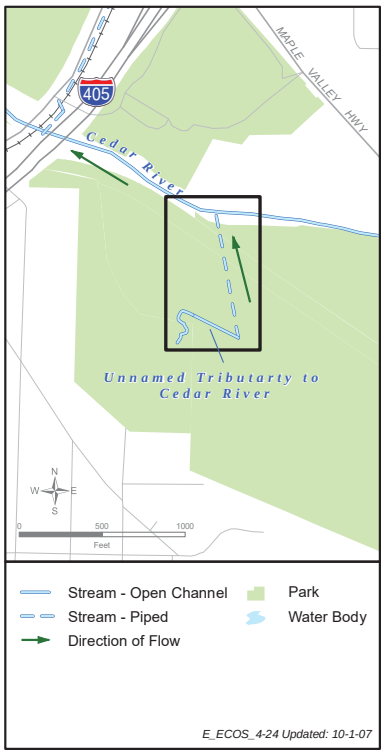
54 *Kerwin, 2001*

Unnamed Tributary to the Cedar River

The unnamed tributary to the Cedar River originates from the hillside located to the southeast of I-405 immediately south of the Cedar River. The unnamed tributary flows from the hillside, follows the toe of the hill, and enters a wetland with no defined channel. The wetland then drains into a culvert that outfalls to the Cedar River approximately 400 feet from the wetland. Along the toe of the hill, the unnamed tributary has a mixed deciduous and coniferous forested riparian canopy with an understory consisting of a mix of native and non-native plant species. This stream buffer decreases in size as the tributary flows toward the culvert that connects it to the Cedar River. Exhibit 4-25 depicts the unnamed tributary to the Cedar River.

No anadromous fish species are expected to occur in the unnamed tributary to the Cedar River due to the lack of a defined channel upstream of where it confluences with the Cedar River.

Exhibit 4-25: Unnamed Tributary to the Cedar River



Fish Passage Barriers

WSDOT has identified 10 existing culverts that convey waters of the state, have been determined to be fish bearing, and where in-water work will occur as a result of the project. Of these 10 culverts, WSDOT has determined that seven of them are existing fish passage barriers.[55] These fish passage barriers occur on Panther Creek, Rolling Hills Creek, an unnamed tributary to Rolling Hills Creek, and Thunder Hills Creek and are described in greater detail under the descriptions of these streams above. The remaining three culverts are presently fish passable. WSDOT will address fish passage at the culverts per the Memorandum of Agreement between WSDOT and WDFW. Exhibit 4-26 details the fish bearing culverts associated with in-water work.



Cedar River tributary just upstream of culvert

[55] *WSDOT, 2007a*

Exhibit 4-26: Fish Bearing Culverts Associated with In-water Work

Stream Conveyed	Culvert Type	Culvert Length (ft)	Upstream Habitat (lf)*	Fish Passable	Barrier Description
Gilliam Creek	108 inch CMP	1,103	600 to 800	Yes	N/A
Gilliam Creek	108 inch CMP	207	1,300 to 2,600	Yes**	N/A
Rolling Hills Creek	48 inch CONC	551	10,200***	No	Temporal barrier based on velocity
Rolling Hills Creek	132 inch CMP	918	6,300***	No	Pipe exceeds velocity criteria at high fish passage design flow
Tributary to Rolling Hills Creek	30 inch CONC	281	200	No	Pipe exceeds velocity and water depth criteria at high fish passage design flow
Thunder Hills Creek	48 inch CONC	466	100	No	Pipe exceeds velocity criteria at high fish passage design flow
Panther Creek	24 inch CMP	155	2,600	No	Pipe exceeds velocity criteria at high fish passage design flow
Panther Creek	30 inch CMP	153	2,600	No	Pipe exceeds velocity criteria at high fish passage design flow
Panther Creek	72 inch Steel	189	7,100	No	Temporal barrier based on velocity
Rolling Hills Creek	3-foot by 4-foot box	265	N/A**** (fish passable)	Yes	N/A

* All habitat gains are approximations based on field reconnaissance and are rounded to the nearest hundred foot increment.

** A large metal flap gate (which controls high flows) and a splash pad are located at the end of this culvert. The flap gate and splash pad on downstream end of the culvert prevent fish from moving up or downstream when it is closed. This culvert is owned by the City of Tukwila (Anchor, 2005).

*** These culverts both carry the main flow of Rolling Hills Creek underneath the I-405/SR 167 interchange. As such, they must be considered together for purposes of fish passage.

**** No upstream habitat length is identified for this culvert as it is presently fish passable and all known upstream habitat is presently available.

CMP = corrugated metal pipe CONC = concrete ft = feet lf = linear feet

Wildlife Habitat

I-405 biologists identified five categories to describe upland vegetation found in the study area. The five categories include wetlands, which provide habitat for a variety of wildlife species in the study area, and four land cover types: forested, shrubs and grasses, maintained vegetation, and impervious surface or area. Wetlands are discussed in detail earlier in this report. As shown in Exhibit 3-1, the study area for upland

vegetation extends 0.5 mile from I-405. Land cover in the study area totals approximately 5,785 acres.

The forested land use cover type is defined as those vegetated areas where tree species with an average height greater than 20 feet are the predominant vegetation. Typical large tree species found in the forested portions of the study area include big leaf maple (*Acer macrophyllum*), red alder, black cottonwood, and Douglas fir (*Pseudotsuga menziesii Franco*). In addition, Western red cedar *(Thuja plicata)* and a variety of hemlocks are occasionally found in the study area. The plants found in the understory of the forested land use cover type include immature tree species; beaked hazelnut (*Corylus cornuta*); vine maple (*Acer circinatum Pursh*); Oregon grape (*Mahonia aquifolium*); salal (*Gaultheria shallon Pursh*); oceanspray (*Holodiscus discolor*); elderberry (*Sambucus var.*); serviceberry (*Amelanchier arborea var.*); stinging nettles (*Urtica dioica*); salmonberry; and sword, lady, and maidenhair ferns (*Polystichum munitum, Athyrium filix-femina,* and *Adiantum pedatum*). A variety of non-native invasive species can also be found in the forested land use cover type including black locust (*Robinia pseudoacacia*); American holly (*Ilex opaca*); English laurel (*Prunus laurocerasus*); field bind weed (*Convolvulus arvensis*); Japanese knotweed (*Polygonum cuspidatum*); Himalayan blackberry; and several grass, tansy, and vetch species. Forested areas total approximately 550 acres in the study area, approximately 9 percent of the total land cover.

The shrub/grasses land use cover type consists of vegetated areas predominated by woody plants less than 20 feet tall, grasses and grass-like plants, or both. Plant species typically found in this land use cover type are similar to those understory and invasive plants found in the forested land use cover type, with the exception of those species that have a strong preference for shaded environments. The shrubs and grasses land cover totals approximately 251 acres in the study area, approximately 4 percent of the total land cover.

The maintained vegetation land use cover type is composed of areas of roadside vegetation, including roadway medians and shoulders, that are regularly maintained for safety purposes, and landscaped areas consisting primarily of plants grown for beauty or ornamental value for residential, commercial, and industrial developments. Maintained vegetation is typically

found in developed or disturbed areas. Maintained vegetation land cover totals approximately 1,550 acres in the study area, approximately 27 percent of the total land cover.

The impervious surface land use cover type includes areas such as pavement, roofs, and compacted or hardened surfaces that do not allow the passage of rainfall or runoff into the ground. Impervious surfaces such as roads, buildings, and parking lots have little to no habitat value. This cover type does contain some small patches of vegetation and open ground that might provide very limited use as habitat. These vegetated patches and open ground areas are typically occupied by non-native rather than native wildlife species. Impervious surface or area totals approximately 3,435 acres in the study area, or 60 percent of the total land cover in the study area.

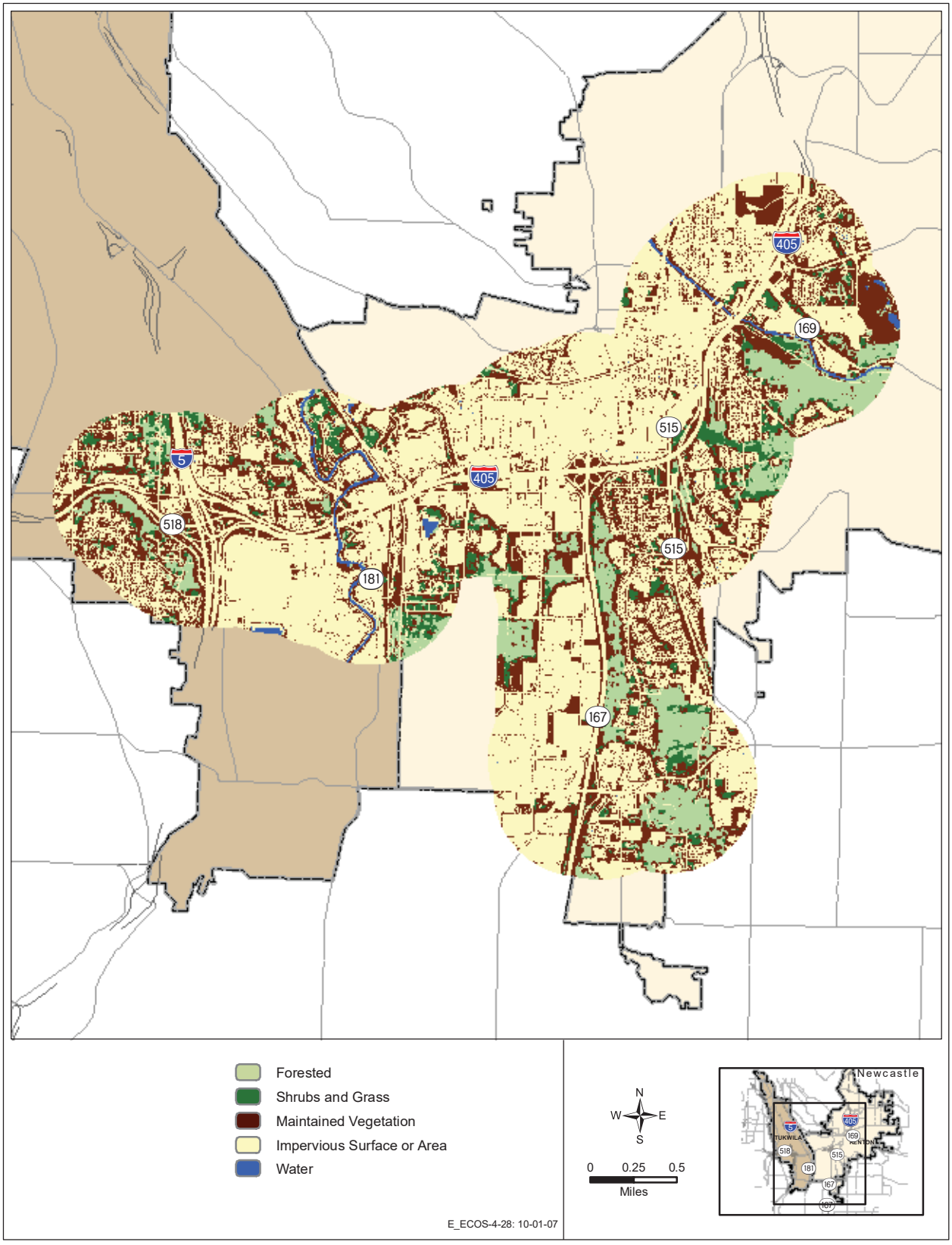
The associated acreages and percentages of land cover types in the study area, and typical percentages of these land cover types in the watersheds in the study area, are listed in Exhibit 4-27. The land use cover types in the study area are shown in Exhibit 4-28. Refer to Exhibits 4-1, 4-3, 4-4, and 4-5 for the total area and distribution of wetlands in the study area.

Exhibit 4-27: Baseline Land Cover In the Study Area

Land Cover	Baseline Land Cover in Study Area (acres)	Percentage of Land Cover in Study Area (percent)	Typical Percentage of Land Cover in Green River, Springbrook, and Cedar River Watersheds*
Forested	550	9%	19%
Shrubs and Grasses	251	4%	6%
Maintained Vegetation	1,550	27%	6%
Impervious Surface	3,434	60%	46%
Total	**5,785**		

* Within 5 miles of the project footprint

Exhibit 4-28: Land Use Cover Types in Study Area



What is a wetland hydrogeomorphic classification?

The hydrogeomorphic classification of a wetland is based on the three fundamental factors that influence how wetlands function, including geomorphology, water source, and hydrodynamics.

What is a riverine wetland?

Riverine wetlands occur in valleys associated with stream or river channels. They lie in the active floodplain of a river and have important hydrologic links to the water dynamics of the river or stream. The distinguishing characteristic of riverine wetlands in Washington is that they are frequently flooded by overbank flow from the stream or river.

What is a slope wetland?

Slope wetlands normally are found where there is a discharge of groundwater to the land surface. Slope wetlands are usually incapable of depressional storage because they lack the necessary closed contours. Principal water sources are usually groundwater return flow and flow from surrounding uplands, as well as precipitation.

What functions do study area ecosystem elements provide?

Wetlands

In general, wetlands in the Tukwila to Renton Project study area provide many functions including fish and wildlife habitat, water quality improvements, floodwater storage, and groundwater recharge. However, most of the study area wetlands have been disturbed by human influence to some extent. Consequently, these wetlands are compromised in their ability to provide these functions.

The functional values of wetlands in the study area were rated according to the most current version of the Ecology *Washington State Wetlands Rating System – Western Washington: Revised*.[56] Based on the rating scores, the overall functions of each of the three wetland rating categories of water quality, hydrologic, and wildlife habitat are rated as low (less than 34 percent of the possible maximum score), moderate (34 percent to 67 percent of the possible maximum score), or high (greater than 68 percent of the possible maximum score). Overall, the majority of wetlands in the study area have low water quality, hydrologic, and wildlife habitat function scores. Few of the wetlands have high water quality or wildlife habitat function scores and none of the wetlands have high hydrologic function scores. Of the 22 wetlands in the study area, 17 were identified as depressional wetlands, three were identified as riverine wetlands, one was identified as a depressional and riverine wetland, and one was identified as a slope wetland. Ecology's wetland rating field data forms are presented in Appendix C. Additional information on the wetlands in the study area can be found in Appendix D and a table summarizing wetland functions can be found in Appendix E.

Habitat function of the study area wetlands is further defined by their Cowardin classification (forested, scrub-shrub, emergent, and aquatic bed). Three wetlands were classified as forested systems, six wetlands were classified as scrub-shrub systems, six wetlands were classified as emergent wetlands, one wetland was classified as a scrub-shrub and aquatic bed system, four wetlands were classified as scrub-shrub and

[56] *Ecology, 2004*

emergent systems, and two of the wetlands include forested, scrub-shrub, and emergent systems. Wetlands with mixed classifications are generally of higher value than wetlands with a single classification. Forested wetlands are generally considered to be of higher value than emergent or scrub-shrub wetlands because of the functional values they provide.

In general, the smaller sized wetland systems are emergent wetlands and the larger wetlands, including the wetlands that extend outside the WSDOT right-of-way, are forested and scrub-shrub systems.

Fifteen of the 22 wetlands (68 percent) within the study area are relatively small (less than 0.6 acres). Of these 15 wetlands, 14 are less than 0.4 acres and nine are less than 0.1 acre. These small wetlands tend to be located in small topographic depressions with hydrologic connections to hillside seeps or roadside drainage ditches with associated catch basins or culverts. Of the remaining seven wetlands in the study area, three (14 percent) are between 1 acre and 1.3 acres, and four (18 percent) are larger than 4 acres. The seven wetlands in the study area that are larger than 1 acre are Wetlands 0.3R and 0.9R in the Green River Basin, and Wetlands 2.9L, 24.7R, 25.0L, 25.5L, and 25.8L in the Springbrook Creek Basin.

Large wetlands have more capacity for capturing stormwater flows, improving water quality, and providing a variety of habitats for wildlife, and are more likely to provide more beneficial functions than smaller wetlands. Water quality, hydrologic, and habitat functional values for wetlands in the study area are described below. For each category, the wetland's opportunity to provide that function is described first and the wetland's potential to provide that function is described thereafter. Ecology's wetland function field data forms are presented in Appendix C.

Water Quality Functions

All of the wetlands in the study area provide opportunities to improve water quality, to varying degrees, primarily because their location in an urban environment allows the opportunity for water quality improvement.

Ten of the 22 wetlands (45 percent) in the study area have a low potential (less than 34 percent of the possible maximum score) to improve water quality due to their association with

roadside drainage ditches with culverts or catch basins that provide unconstricted or slightly constricted surface outlets. Minimal or no seasonal ponding occurs within these 10 wetlands. Ten of the wetlands (45 percent) have moderate potential scores (34 to 67 percent of the possible maximum score) to improve water quality. The remaining two wetlands (9 percent), Wetlands 24.7R and 25.0L, have a high potential to improve water quality (greater than 68 percent of the possible maximum score). Wetlands with moderate or high scores typically have characteristics such as organic soils, a high proportion of wetland area with seasonal ponding, or dense vegetation to restrict flow through the wetland.

What are wetland hydrologic functions?

Wetland hydrologic functions include flood storage and erosion reduction.

Hydrologic Functions

All of the wetlands in the study area provide opportunities to reduce flooding and erosion to varying degrees.

Fourteen of the 22 wetlands (64 percent) in the study area have a low potential (less than 34 percent of the possible maximum score) to reduce flooding and erosion. The low scores for potential hydrologic functions are due to a lack of natural surface water outlets, ponding features, and the types of vegetation to reduce surface flows; a high presence of ditch-like characteristics; and small contribution of the wetlands to the larger watershed. Six of the wetlands (27 percent) have moderate potential scores (34 percent to 67 percent of the possible maximum score). The remaining two wetlands (9 percent), Wetlands 0.9R and 2.81R, have high function scores for the potential to improve hydrologic functions (greater than 68 percent of the possible maximum score). Wetlands with moderate or high scores typically have characteristics such as a highly constricted outlets or significant water storage depths during wet periods.

Habitat Functions

Ten of the 22 wetlands (45 percent) have a low potential (less than 34 percent of the possible maximum score) to provide habitat for many species. The low score for habitat opportunity is due to the characteristics of the wetland buffers and the overall lack of quality habitat conditions near or adjacent to the wetlands, including their proximity to roads and highway medians. In addition to the wetlands being located near roads, the sides of the wetlands opposite the roadway are often located near residential or commercial

development. Eleven (50 percent) of the wetlands had a moderate score (34 to 67 percent of the possible maximum score) and one wetland (5 percent), Wetland 24.7R, had a high score (greater than 68 percent of the possible maximum score).

Wetlands with moderate or high scores typically have characteristics such as a several Cowardin vegetation classes, several hydroperiods, high habitat interspersion, or the presence of special habitat features. Twenty-one of the 22 wetlands (95 percent) have a low potential (less than 34 percent of the possible maximum score) to provide habitat for many species. The low score for habitat functions is due to the general lack of vegetative structure, hydroperiods, plant richness, habitat diversity, and special habitat features. The remaining wetland (5 percent) has a moderate potential score (34 to 67 percent of the possible maximum score). The wetland with the moderate score has a relatively undisturbed buffer.

What are special habitat features?

Special habitat features include large woody debris, snags, undercut banks, beaver habitat, amphibian habitat, and less than 25 percent cover of invasive plant species.

Several of the wetlands in the study area also have the potential to act as juvenile salmonid rearing habitat due to their association with a waterbody that is known or assumed to contain juvenile salmonids. The wetlands that could provide juvenile salmonid rearing habitat are Wetlands 0.15R and 0.3R due to their association with Gilliam Creek, and Wetlands 24.7R and 25.0L due to their association with Panther Creek. Wetlands 0.15R and 0.3R are located above the ordinary high water mark (OHWM) of Gilliam Creek and only provide refugia habitat for fish during high flow events. Wetlands 24.7R and 25.0L have permanent connections to Panther Creek and provide year-round refugia habitat for fish.

Aquatic Resources

Rivers, streams, and their associated buffers provide a variety of functions. These functions include the transport and storage of water, sediment, nutrients, and other materials; habitat for plants, animals, and humans; groundwater recharge; floodwater storage; and filtering of contaminants. The rivers and streams in the study area perform these functions to varying degrees.

Within the study area, the riparian and in-stream habitat conditions are largely degraded; however, the streams, rivers, and associated riparian habitat in the study area still provide habitat for a variety of fish and wildlife species. Anadromous

and resident fish species use the streams and rivers for spawning, rearing, migration, foraging, and refugia. Upland species use the stream, river, and riparian areas for refugia, foraging, hunting, nesting, denning, perching, and migrating.

In addition to providing wildlife habitat, riparian areas also provide shade to help reduce stream temperatures, litterfall that supplies food and other nutrients to the waterbody, and a buffer zone that helps reduce sediment and other contaminant inputs. Riparian vegetation that falls into these waterbodies can also provide cover for fish or provide basking areas for amphibians and reptiles.

Wildlife Habitat

The different land use cover types found in the study area provide functional habitats for a variety of species. Exhibit 4-29 summarizes the species observed during I-405 Team site visits, wetland delineations, and stream surveys and common species not observed but expected to use the study area.

The forested land use cover types in the study area have a relatively high degree of use by wildlife for cover, foraging, nesting, and denning areas, as well as migration corridors. However, forested land use cover types are typically small and surrounded by more urbanized areas, limiting use by larger mammals. Most of the forested habitat in the study area has been affected to some degree by human influence and some of the typical habitat features found in forested areas, such as fallen trees and snags, are lacking in these areas as compared to natural conditions. Primary and secondary cavity nesting bird species have opportunities to nest in areas where dead or dying trees and limbs exist. Portions of the study area contain large trees adjacent to rivers or streams that provide feeding and hunting perches for piscivorous species such as eagles, osprey, herons, and fishers. In general, these forested areas provide habitat for birds, mammals, reptiles, amphibians, and a variety of insect species.

What are piscivorous species?
Piscivorous species are fish-eating species of animals.

Exhibit 4-29: Wildlife Use in the Study Area

Species	Observed[1]	Expected[2]	Notes
Birds			
American goldfinch (*Carduelis tristis*)	X		
American robin (*Turdus migratorius*)	X		
Barn swallows (*Hirundo rustica*)	X		
Belted king fisher (*Megaceryle alcyon*)	X		
Bewicks wren (*Thryomanes bewickii*)	X		
Black-capped chickadee (*Poecile atricapillus*)	X		
Brewer's blackbird (*Euphagus cyanocephalus*)		X	
Brown creeper (*Certhia americana*)	X		
Bushtit (*Psaltriparus minimus*)	X		
Cedar waxwing (*Bombycilla cedrorum*)		X	
Cliff swallows (*Petrochelidon pyrrhonota*)	X		
Coopers hawk (*Accipiter cooperii*)	X		
Dark eyed junco (*Junco hyemalis*)		X	
Downey woodpecker (*Picoides pubescens*)	X		
European starling (*Sturnus vulgaris*)	X		
Great blue heron (*Ardea herodias*)	X		
House finch (*Carpodacus mexicanus*)		X	
Mallard (*Anas platyrhynchos*)		X	
Mourning dove (*Zenaida macroura*)		X	
Northern flicker (*Colaptes auratus*)	X		
Northern rough-winged swallow (*Stelgidopteryx serripennis*)	X		
Northwest crow (*Corvus caurinus*)	X		
Osprey (*Pandion haliaetus*)	X		Male, female, and juvenile seen at one location
Pileated woodpecker (*Dryocopus pileatus*)	X		
Red-breasted merganser (*Mergus serrator*)		X	
Red-tailed hawk (*Buteo jamaicensis*)	X		
Red-winged blackbird (*Agelaius phoeniceus*)		X	
Rock dove (*Columba livia*)	X		
Rufus hummingbird (*Selasphorus rufus*)		X	
Song sparrow (*Melospiza melodia*)	X		
Stellars jay (*Cyanocitta stelleri*)	X		
Tree swallow (*Tachycineta bicolor*)	X		

1 - Species in the observed column were observed during IDT site visits, wetland delineations, and stream surveys performed for the project

2 - Species in the expected column are common species typical to the project area, but not observed during fieldwork performed for the project

Exhibit 4-29: Wildlife Use in the Study Area (continued)

Species	Observed[1]	Expected[2]	Notes
Violet green swallows (*Tachycineta thalassina*)	X		
Western scrub jay (*Aphelocoma californica*)	X		Adults feeding three juveniles
White crowned sparrow (*Zonotrichia leucophrys*)		X	
Winter wren (*Troglodytes troglodytes*)		X	
Yellow-rumped warbler (*Dendroica coronata*)	X		
Mammals			
Various bat species (*Myotis spp.*)		X	
Coyote (*Canis latrans*)		X	Scat and tracks observed
Deer (*Odocoileus spp.*)	X		
Field mice		X	
Feral Cats (*Felis cattus*)		X	
Feral Dogs (*canis lupus familiaris*)		X	
Gray squirrel (*Sciurus carolinensis*)	X		
Douglas squirrel (*Tamiasciurus douglasii*)	X		
Opossum (*Didelphis virginiana*)		X	
Mountain beaver (*Aplodontia rufa*)		X	Burrow observed
Rabbit	X		
Raccoon (*Procyon lotor*)	X		Sleeping in crotch of maple tree
Vole (*Microtus longicaudus*)		X	
Insects			
Dragonfly	X		
Gardner spider	X		
Mosquitos	X		
Paper wasps (*Polistes fuscatus pallipes*)	X		
Swallow-tailed butterfly (*Papilio spp.*)	X		
Water striders (*Gerris remigis*)	X		
Western white butterfly (*Pontia occidentalis*)	X		
Woodland skipper butterfly (*Ochlodes sylvanoides*)	X		
Yellow jackets (*Vespula spp.*)	X		
Honey bees (*Apis mellifera*)	X		
Reptiles/Amphibians			
Garter snake (*Thamnophis spp.*)	X		
Pacific chorus frog (*Pseudacris regilla*)		X	

1 - Species in the observed column were observed during IDT site visits, wetland delineations, and stream surveys performed for the project

2 - Species in the expected column are common species typical to the project area, but not observed during fieldwork performed for the project

The shrub/grasses cover type provides habitat for a variety of smaller birds and mammals, reptiles, amphibians, and a variety of insect species. Shrubs and grasses provide food sources for insects, songbirds, upland game birds, and many mammals. Shrubs can also provide shelter from predators or extreme weather, or to nest and raise young. Predator species, such as raptors and coyotes, use shrub and grassy areas to hunt.

The maintained vegetation land use cover type does not typically provide habitat for a large diversity of species due to the regular disturbance regime associated with these areas. These areas are often frequented by small birds and mammals that are adapted to human presence. Use of these areas by small birds and mammals can attract predators to these areas.

Non-native plant species are common to both the shrub/grasses and maintained vegetation land use cover types. The presence of these non-native plant species typically increases and favors use by non-native wildlife species. In addition, the entirety of the study area is used by non-native domesticated and feral wildlife such as cats, dogs, and other common pet species.

The impervious surface land use cover type provides little to no wildlife habitat value.

Do any federally listed species or federal species of concern occur in the study area?

No federally listed upland species are known to inhabit the study area. The USFWS website shows that ESA-listed species, including Canada lynx (*Lynx canadensis*), gray wolf (*Canis lupus*), marbled murrelet (*Brachyramphus marmoratus marmoratus*), northern spotted owl (*Strix occidentalis caurina*), golden paintbrush (*Castilleja levisecta*), marsh sandwort (*Arenaria paludicola*), grizzly bear (*Ursus arctos horribilis*), or fisher *(Martes pennanti)*, could occur in King County; however, there are no known occurrences of and no suitable habitat exists for these species in the study area.

Several of the rivers and streams in the study area contain various life stages of Chinook salmon, steelhead, and bull trout, which are currently listed as threatened under the ESA. Waterbodies in the study area known to be used by Chinook salmon include the Green and Cedar Rivers and Springbrook

Creek, though it is likely that some smaller waterbodies in the study area also support certain Chinook salmon life stages, such as Gilliam Creek, due to its connection to the Green River and the lower reaches of Panther Creek due to its association with Springbrook Creek. Chinook salmon primarily use the portions of these waterbodies that are in the study area for upstream and downstream migration and rearing; however, substrate conditions in the Cedar River in the study area could provide some limited spawning habitat. The Chinook salmon found in these waterbodies are a part of the Puget Sound evolutionarily significant unit (ESU) of Chinook salmon, listed as threatened under the ESA.[57]

What is an Evolutionarily Significant Unit?

An evolutionarily significant unit (ESU) of a fish species is the term used by NMFS for the population protected by a listing under the ESA.

Critical habitat for Chinook salmon is designated for areas containing the physical and biological habitat features, or primary constituent elements (PCEs), essential for conserving the species or that require special management considerations. PCEs include sites that are essential to support one or more life stages of the ESU and that contain physical or biological features essential to the conservation of the ESU. The portions of the Green and Cedar Rivers and Springbrook Creek that are located in the study area are designated as critical habitat for Chinook salmon.

Historically, bull trout were reported to use the lower Green River in "vast" numbers.[58] However, bull trout are observed infrequently in this system today. In recent times, bull trout have been reported on the lower Green River as far upstream as the mouth of Newaukum Creek at approximately RM 41.[59] In addition, the Lake Washington system (including the Cedar River), the lower Green River, and the marine areas of Puget Sound have been identified as containing important foraging, migration, and overwintering habitat necessary for bull trout recovery.[60]

It is not known whether the bull trout observed in the lower Green River basin are foraging individuals from other core areas or if natural reproduction may still persist somewhere within the basin. Based on observed behavior from other

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57 *NMFS, 1999*

58 *Suckley and Cooper, 1860*

59 *USFWS, 2004*

60 *USFWS, 2004*

systems within the management unit and on the size of individuals typically reported, there is a strong likelihood that bull trout in the lower Green River are anadromous migrants from other core areas. Reports of historic bull trout use of the lower Green River tributaries are rare and there have been no recent observations.[61]

The study area also contains areas designated as critical habitat for bull trout. For an area to be included as critical habitat, it must provide one or more of the following functions for bull trout: spawning, rearing, foraging, or over-wintering habitat to support essential existing bull trout local populations; movement corridors necessary for maintaining essential migratory life history forms; or suitable habitat that is considered essential for recovering existing local populations that have declined or that need to be re-established to achieve recovery. The portions of the Green River located in the study area are designated as critical habitat for bull trout because they provide movement corridors necessary for maintaining essential migratory life history forms.

Waterbodies in the study area known or anticipated to be used by steelhead include the Green and Cedar Rivers and Gilliam, Springbrook, and Panther Creeks, though it is likely that some smaller waterbodies in the study area also support certain steelhead trout life stages. The steelhead trout found in these waterbodies are a part of the Puget Sound distinct population segment (DPS) of steelhead trout. NMFS has concluded that critical habitat cannot be determined at this time for the Puget Sound steelhead DPS.[62]

Coho salmon and Pacific and river lamprey (federal species of concern under the ESA) can be found in the waterbodies in the vicinity of the study area.

Washington State priority fish and aquatic species include all state endangered, threatened, sensitive, or candidate species, and species of recreational, commercial, or tribal importance that are considered vulnerable. All fish species with state candidate status that occur in the study area also hold a federal designation and have been discussed earlier in this section. No other state sensitive, threatened, or endangered

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61 *USFWS, 2004*

62 *NMFS, 2006*

fish species occur within the study area. Other fish species that are designated as priority species that may occur within the study area include chum and sockeye salmon, coastal cutthroat trout, and river lamprey.[63]

Is the project within a recognized tribal fishing area?

The Tukwila to Renton Project is located within the tribal treaty rights for usual and accustomed fishing areas of the Muckleshoot Tribe. The Muckleshoot Tribe's usual and accustomed fishing areas in the study area include the Green, Cedar, and Black Rivers, and the tributaries to these rivers.

What are Treaty Tribes?

Any tribe recognized by the United States government, with usual and accustomed fishing grounds, whose fishing rights were reserved under a treaty and have been affirmed by a federal court.

Before the Lake Washington ship canal was constructed in 1916, Lake Washington extended farther south and had its outlet through the Black and Duwamish Rivers. The Cedar River did not empty into the lake, but rather into the Black River. At the junction of the Cedar and Black Rivers were several winter villages and an important tribal fishery. The Black River joined the White River to form the Duwamish River and there was another important tribal settlement and fishery at this junction. Farther upstream, the White River and the Green River met and on the land between the forks was the most important and largest up-river settlement and fishery.[64]

The Muckleshoot harvest salmon from the study area pursuant to judicially recognized treaty rights, as interpreted by the Boldt Decision of 1974. The Boldt Decision provided the Yakama Tribe "the right to enjoy all of these fisheries as they had beforehand," which requires that they take the fish "by consent of the tribes in that region" and that consent still applies today. Over the years, judicial decisions have affirmed that treaty tribes have a right to harvest fish free of state interference, subject to conservation principals, to co-manage the fishery resource with the state, and to harvest up to 50 percent of the harvestable fish.[65]

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63 *WDFW, 2004*

64 *For details on these judicial decisions, refer to* United States v. Washington, *384 F. Supp. 312 (WD Wn.1974), aff'd 520 F.2d 676 (9th Cir. 1975).*

65 *For details on these judicial decisions, refer to* United States v. Washington, *384 F. Supp. 312 (WD Wn.1974), aff'd 520 F.2d 676 (9th Cir. 1975).*

SECTION 5 PROJECT EFFECTS

How will project construction affect ecosystem elements?

To build the Tukwila to Renton Project, construction activities will need to occur in and adjacent to wetlands, streams, and their associated buffers. In addition, construction activities will also occur in areas containing wildlife habitat. The construction effects we consider in this section are based on the assumption that all of the components of the project will be constructed per the description of the Tukwila to Renton Project found in Section 2 of this report.

The effects from project construction fall into two categories: temporary and permanent effects. Temporary effects are categorized as those effects that will dissipate over time, such as clearing of a work area that will ultimately be replanted and (over time) restored to or enhanced above its pre-disturbance state. Permanent effects are those effects that will remain in perpetuity after the project is constructed, such as permanent areas of new roadway or new bridges.

Project biologists worked with project engineers to identify where the project improvements would potentially affect the ecosystems resources. Prior to finalizing the project footprint, the I-405 Team modified the design, where feasible, to reduce or avoid effects to wetlands, streams, their associated buffers, and upland habitat. When one of these ecosystem elements was located within the construction footprint, engineers changed the footprint to avoid the element or, if the element could not be avoided, WSDOT determined to what degree project construction will affect ecosystem elements.

Wetlands

Portions or all of 12 of the 22 wetlands in the study area will be permanently filled or temporarily disturbed as a result of the project. Overall, 12 wetlands (approximately 7.5 acres) will be permanently disturbed by filling or grading to construct road improvements. Five of the wetlands that will be permanently disturbed are Category IV wetlands, six are Category III wetlands, and one, Wetland 24.7R, is a Category II wetland. Six of the 12 wetlands that will permanently disturbed will be completely filled. These six

wetlands, two Category III wetlands and four Category IV wetlands, include 0.55 acres of the permanent wetland effects. The majority of permanent wetland effects, 5.42 acres, will occur to Wetland 24.7R, a Category II wetland. Six wetlands (approximately 1.1 acres) will be temporarily disturbed. Disturbances to these six wetlands will include both temporary and permanent effects.

Wetland buffer effects will include permanent effects to the buffers of nine wetlands (approximately 8.1 acres) and temporary effects to the buffers of nine wetlands (approximately 0.5 acre). If a wetland is wholly filled, it is not considered to incur buffer effects. Effects to wetland buffers will include the same wetlands that will have temporary and permanent direct wetland effects, with the exception of Wetlands 0.6L, 2.7R, and 25.5L, which will incur temporary and permanent buffer effects, but no wetland effects.

Permanent Wetland Effects

To build the project, construction activities will need to occur in and adjacent to wetlands and their buffers. The magnitude of wetland disturbances generally depends on a wetland location and its proximity to proposed construction activities. In addition, the project will convert wetland buffer areas into new roadway facilities.

The total acreage of the wetlands in the study area is 93.86 acres. Of that total, 7.5 acres of 12 wetlands will be permanently affected by the project. The largest portion of affected wetlands includes 5.42 acres of Wetland 24.7R, an approximately 61-acre Category II wetland. The remaining permanent wetland effects include 1.81 acres of six Category III wetlands and five Category IV wetlands totaling 0.27 acres. Six of these 12 wetlands will be partially filled and six wetlands, Wetlands 2.2R-A, 2.2R-B, 2.31R, 2.6R, 2.81L, and 25.7L, will be completely filled.

Wetland buffers are areas of land surrounding a wetland boundary that protect wetlands from the effects of adjacent land use. Buffers help wetlands function by filtering storm runoff from surrounding developments, trapping sediment, absorbing nutrients, attenuating high flows, and providing wildlife habitat. Buffers also physically separate wetlands from developed areas in order to lessen noise, light, chemical pollution, and other associated human-related disturbances.

Due to the interconnectivity between a wetland and the surrounding uplands, effects to the buffer can damage the ability of the wetland to perform ecological functions.

Existing structures such as buildings, road prisms, and paved or impervious surfaces are not considered wetland buffer habitat, but provide information on the overall functions and values of the wetland systems. Most of the wetlands in the study area are adjacent to some paved surfaces and road fill prisms. Overall, wetland buffer habitat in the study area is generally of low quality and typically includes shrub, grass, and herbaceous habitat typically associated with highway right-of-way.

Wetland buffer effects will include permanent effects to the buffers of nine wetlands, totaling approximately 8.1 acres of wetland buffers located within the study area. Permanent effects to wetland buffers include the same wetlands that will have permanent wetland effects, with the exception of Wetlands 0.6L, 2.7R, and 25.5L, which will incur no direct wetland effects. A summary of the permanent wetland and associated wetland buffer effects is provided in Exhibit 5-1.

Exhibit 5-1: Summary of Permanent Wetland Effects

Wetland	Wetland Size (acres)	Permanent Wetland Effects (acres)	Percentage of Wetland Incurring Permanent Effects (%)	Wetland Buffer Size (acres)	Permanent Buffer Effects (acres)	Percentage of Wetland Buffer Incurring Permanent Effects (%)**
0.6L	0.17	0.00	0%	0.63	0.26	41%
0.9R	1.00	0.12	12%	1.70	0.64	49%
2.2R-A	0.03	0.03	100%	0.00***	0.00	0%
2.2R-B	0.03	0.03	100%	0.00***	0.00	0%
2.31R	0.01	0.01	100%	0.00***	0.00	0%
2.6R	0.15	0.15	100%	0.49	0.00	0%
2.7R	0.25	0.00	0%	1.03	0.03	3%
2.81L	0.03	0.03	100%	0.00	0.00	0%
2.82R	0.38	0.17	45%	1.22	0.93	76%
2.9L	1.05	0.06	6%	0.74	0.12	16%
24.7R	61.00*	5.42	9%	25.90	4.23	16%
25.0L	4.51	0.61	14%	3.92	0.87	22%
25.5L	11.38*	0.00	0%	4.41	0.04	1%
25.7L	0.30	0.30	100%	0.34	0.34	0%
25.8L	11.50	0.57	5%	3.42	0.60	17%
Total	**11.5***	**7.5******	**8%**	**42.97**	**8.1********	**17%**

*The size of these wetlands was estimated as the majority of their area lies outside of the study area. The total wetland acreage includes both the estimates and actual wetland survey data. This total represents only wetlands that are affected by the Tukwila to Renton Project.

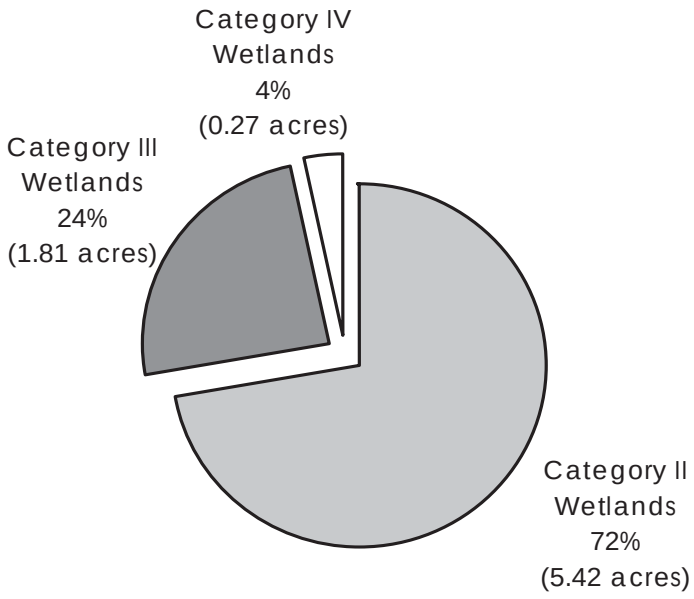
**Wetlands with less than 1 percent disturbance are rounded up to 1 percent.

***City of Renton wetlands less than 2,200 square feet (0.05 acre) are exempt from regulation under RMC Critical Areas Regulations (RMC 4-3-50 B(7)).

**** The total permanent effects in this table have been rounded up to the nearest tenth of an acre

A summary of the permanent effects to wetlands, categorized by the Ecology rating system is provided in Exhibit 5-2.

Exhibit 5-2: Percentages of Permanent Effects to Wetlands, Categorized by the Ecology Rating System



Filling a portion of a wetland or altering its vegetation can reduce the wetland's capacity to store stormwater, filter pollutants, protect stream banks from erosion, and provide wildlife habitat. Overall, wetland buffer habitat in the study area is generally of low quality and typically includes shrub, grass, and herbaceous habitat typically associated with highway right-of-way. Existing structures such as buildings, road prisms, and paved or impervious surfaces are not considered wetland buffer habitat.

Temporary Wetland Effects

To build the project's roadway and stormwater facilities, some construction activities will need to occur outside of the permanent project footprint, including clearing of both wetland and upland vegetation. As a result, WSDOT may need to place temporary fill in wetlands and buffers to allow adequate room for construction activities. This construction disturbance will result in a short-term loss of wetland functions. Potential erosion and sedimentation caused by construction activities will increase the amount of sediment settling within a wetland and reduce the quality of habitat available for invertebrate life and habitat for plants. Additionally, loose sediment will reduce the potential water

quality and quantity benefits provided by those wetlands. Loss of tree, shrub, and emergent vegetation will reduce the quality of habitat available for birds and small mammals. After the project is complete, wetlands where the vegetation is cleared or trimmed will still retain some water quality and quantity function, although at a diminished level until the wetlands are completely reestablished. These temporarily disturbed areas will be restored and replanted with appropriate native vegetation. WSDOT will develop a project-specific plan before construction begins to identify how vegetation restoration will occur.

The total acreage of wetlands in the study area is 93.86 acres. Of that total, approximately 1.1 acres will be temporarily affected. The total acreage of wetland buffer in the study area is 48.19 acres. Of this total, approximately 0.5 acre, or less than 2 percent, of wetland buffer will be temporarily affected. With the exception of wetlands 24.7R and 25.8L, most of the temporary wetland effects will occur within wetlands that are dominated by invasive species and surrounded by urban land uses including roads and buildings. The temporary effects to wetlands and their associated buffers are detailed in Exhibit 5-3.

Exhibit 5-3: Summary of Temporary Wetland Effects

Wetland	Wetland Size (acres)	Temporary Wetland Effects (acres)	Percentage of Wetland Incurring Temporary Effects (%)	Wetland Buffer Size (acres)	Temporary Buffer Effects (acres)	Percentage of Wetland Buffer Incurring Temporary Effects (%)**
0.6L	0.17	0.00	0%	0.63	0.08	13%
0.9R	1.00	0.03	3%	1.70	0.06	4%
2.7R	0.25	0.00	0%	1.03	0.02	2%
2.82R	0.38	0.02	5%	1.22	0.02	2%
2.9L	1.05	0.03	3%	0.74	0.03	4%
24.7R	61.00*	0.83	1%	25.90	0.08	1%
25.0L	4.51	0.05	1%	3.92	0.08	2%
25.5L	11.38*	0.00	0%	4.41	0.02	1%
25.8L	11.50	0.08	1%	3.42	0.02	1%
Total	**93.86***	**1.1*****	**1%**	**48.19**	**0.5*****	**1%**

*The size of these wetlands was estimated as the majority of their area lies outside of the study area. The total wetland acreage includes both the estimates and actual wetland survey data.

**Wetlands with less than 1 percent disturbance are rounded up to 1 percent.

*** The total temporary effects in this table have been rounded up to the nearest tenth of an acre

Aquatic Resources

Permanent Aquatic Resources Effects

As a result of the project, new roadways and roadway structures (e.g., bridges and culverts) will be built within, over, or near river and stream habitats that support fish and other aquatic species within the study area. Project elements that will permanently affect fisheries and aquatic resources include:

- Construction of one new bridge and reconstruction of five additional bridges over the Green River to accommodate roadway widening, including installation of piling below the OHWM of the Green River.
- Construction of a new stormwater outfall to the Green River.
- Encroachment into the OHWM of Rolling Hills Creek to accommodate I-405, SR 167, and local roadway improvements.
- Encroachment into the OHWM of Thunder Hills Creek to accommodate I-405 roadway improvements including construction of a retaining wall.
- Removal of the Houser Way Bridge over the Cedar River to accommodate widening of I-405.
- Reconstruction of three bridges over the Cedar River, including a pedestrian bridge and relocation of the BNSF Railroad bridge.
- Construction of new stormwater outfalls to the Cedar River.
- Encroachment into the OHWM of Panther Creek between SR 167 and East Valley Road in order to expand SR 167 to the west.
- Encroachment into the OHWM of Panther Creek on the east side of SR 167 to accommodate a new SR 167 northbound auxiliary lane.
- Construction of new stormwater facilities for the treatment of water quality and quantity associated with new impervious surfacing created by the project. For more

information on stormwater facilities, see the *Water Resources Discipline Report*[66] for this project.

A summary of the permanent effects to aquatic resources can be found in Exhibit 5-4.

Exhibit 5-4: Summary of Permanent Aquatic Resource Effects

	Regulated River/Stream Buffer (feet)	Permanent Effect Below OHWM (square feet)	Permanent Effect to River/Stream Buffer (square feet)	Permanent Shading Effects from New Over-water Cover (square feet)*
Gilliam Creek	100	1,742	46,174	0
Green River	100	16,553	121,532	16,988
Panther Creek	100	45,738	36,590	0
Rolling Hills Creek	75	4,792	33,106	5,227
Unnamed Tributary to Rolling Hills Creek	75	871	12,632	871
Thunder Hills Creek	75	2,614	37,462	0
Unnamed Tributary to Thunder Hills Creek	75	495	4,356	0
Cedar River	100	436	25,700	14,375
Total		**73,500****	**318,000****	**37,500****

*Areas of shading detail only those new areas that will be shaded and do not account for existing shaded areas

** The total permanent effects in this table have been rounded up to the nearest 500 square feet

Over-water Structures

Over-water structures refers to structures that span over the top of waterbodies and include bridges and fly-over ramps that will be constructed as part of the project. Shading can have both beneficial and negative effects with regard to fish habitat. Fish and aquatic species are sensitive to incremental shifts in temperatures outside of their natural range. Often, stream systems in urban settings, including many in the project area, have elevated stream temperatures that are a potential threat to fish life. The scientific community has largely attributed these increases in water temperature to effects of impervious surfaces such as pavement, which heat stormwater runoff, and the reduction in shading provided by riparian trees. Shading from bridges over water can help reduce water temperatures and provide a beneficial effect to fish habitat.

Shading from overwater structures can also reduce available food sources for aquatic species. Shading from overwater

[66] *WSDOT, 2007b*

structures can also reduce the rate at which plants produce organic matter that starts food chains, thus reducing available food sources. Additionally, shading of existing stream buffers can result in reduced leaf litter production and an associated reduction in terrestrial invertebrates that fish eat.

Conversely, over-water structures also present a challenge for aquatic prey species such as juvenile salmon. The likelihood of predation is higher in these sections of a stream and certain fish species have demonstrated an aversion to segments with over-water structure. Predator species may concentrate in these areas, making passage for prey species difficult.

The project will create additional over-water cover on the Green River, Gilliam Creek, an unnamed tributary to Gilliam Creek, Rolling Hills Creek, an unnamed tributary to Rolling Hills Creek, Thunder Hills Creek, the Cedar River, and Panther Creek.

Permanent In-Water Structures

The built project will potentially result in permanent structures including pilings, roadways, retaining walls, culverts, and drainage features located within the existing OHWM of several rivers and streams in the study area. Placement of permanent structures within the OHWM will reduce the amount of in-stream habitat available for aquatic dependant organisms and can also reduce the waterbodies' ability to transport and store water, sediment, nutrients, and other materials; and provide for groundwater recharge and floodwater storage. Reducing the amount of available in-stream habitat can also affect fish as they will have fewer places in which to forage for food and hide from predators.

Permanent pilings may be placed within the OHWM of the Green River, Rolling Hills Creek, and the unnamed tributary to Rolling Hills Creek. These pilings are necessary to construct bridges, retaining walls, and fly-over ramps associated with the project. Permanent pilings can affect these waterbodies by causing streambed scour that increases sedimentation and changes to the streambed's sediment composition.

Expansion of the I-405 and SR 167 corridors within the study area will result in portions of the roadway prism being placed

within the OHWM of Gilliam Creek, Panther Creek, Rolling Hills Creek, and the unnamed tributary to Rolling Hills Creek.

An approximately 1 mile segment of Panther Creek flows parallel to SR 167 before flowing through a fish ladder and culvert underneath SR 167 and East Valley Road. The expanded SR 167 fill prism will be located within Panther Creek for the entirety of the area where Panther Creek flows parallel to SR 167, resulting in an almost complete loss of the main channel of Panther Creek in this area. In addition to the effects on the east side of SR 167, approximately 200 linear feet of Panther Creek on the west side of SR 167 will be filled to accommodate widening of the East Valley Road.

Portions of the OHWMs of Gilliam Creek, Rolling Hills Creek, the unnamed tributary to Rolling Hills Creek, and the unnamed tributary to Thunder Hills Creek will be placed in expanded existing or new culverts to accommodate stream flow and fish movements through the expanded road prism. Fill will be placed over the new or expanded culverts to accommodate the expanded roadway. Retaining walls will be placed within the OHWM of Rolling Hills Creek and the unnamed tributary to Thunder Hills Creek to minimize the effects of road widening.

Three new stormwater outfalls will be constructed for the project, one in the Green River and two in the Cedar River. The new outfall to the Green River is associated with a new flow control facility located southwest of the new Tukwila Parkway and SR 181 intersection. Portions of the outfall and/or an associated armored outfall pad will occur below the OHWM of the Green River. Existing outfalls on the north and south side of the Cedar River are anticipated to remain in place; however, portions of a new outfall and an associated armored outfall pad will be constructed below the OHWM.

Stream Buffer Encroachment

The construction footprint will encroach into the stream buffers of several of the streams and rivers in the study area including the Green River, Gilliam Creek, Rolling Hills Creek, an unnamed tributary to Rolling Hills Creek, Thunder Hills Creek, an unnamed tributary to Thunder Hills Creek, the Cedar River, and Panther Creek. Permanent and temporary effects on stream buffers in the study area are summarized in Exhibits 5-4 and 5-5, respectively.

Although baseline riparian conditions vary along the streams in the study area, all of the streams have stream buffers that are moderately to severely degraded. Therefore, many of the functions that riparian vegetation provides (such as LWD recruitment, contribution of organic material, fish cover, bank stabilization, and stream temperature regulation) are already altered and removing additional riparian vegetation could result in more effects to the stream system than would be realized under more natural conditions.

Fish Barrier Removal

WSDOT has identified seven existing fish passage barriers where in-water work will occur. These fish passage barriers occur on Panther Creek, Rolling Hills Creek, an unnamed tributary to Rolling Hills Creek, and Thunder Hills Creek.

Removal of fish passage barriers can result in changes to a waterbody's substrate both up- and downstream of the barrier. Construction related effects from the removal of fish barriers, such as sedimentation, dewatering, and fish removal are discussed in the Temporary Aquatic Resource Effects section.

Stormwater Runoff

The Tukwila to Renton Project would add approximately 58 acres of new net impervious surface within the study area. Increased amounts of impervious surfaces within the study area can result in effects to fish and other aquatic species.

Increases in stream peak flows resulting from increased impervious area can negatively affect fish. Peak flows and sustained high flows in streams during storm events can cause harm to, or kill, fish. Harm typically occurs when fish or other aquatic species are unable to get out of high flow areas and are swept downstream or battered against rocks or streambanks. Harm can also occur when high flows affect feeding or avoidance behavior as well as the energy reserves that help fish and other aquatic species fight disease. In urbanized streams where little to no refugia habitat exists and where storm events can cause rapid rises in stream levels, peak or sustained high flows can be especially detrimental to fish. Rerouting of stormwater into new or existing stormwater systems can change baseline drainage patterns into or away from creeks, and can also result in lost opportunities for groundwater infiltration.

In addition to effects on fish, increases in stream peak flows can also negatively affect aquatic habitat. High flows can cause streambanks and streambeds to scour and erode, resulting in increased sedimentation, changes in streambed composition, and decreased habitat complexity. Streambank scour can also result in losses of stream buffers as streambanks erode and cause plants to fall into the water.

Temporary Aquatic Resources Effects

Project construction will have several temporary effects on fisheries and aquatic resources. These temporary effects are primarily related to construction-related in-water disturbances and stream diversions, in-stream sedimentation, and stream buffer and riparian vegetation. Streams that will be temporarily affected by project construction are the Green River, Gilliam Creek, Rolling Hills Creek, an unnamed tributary to Rolling Hills Creek, Thunder Hills Creek, Panther Creek, and an unnamed tributary to Thunder Hills Creek.

Construction activities over, in, or near a stream can disturb fish, other aquatic species, and aquatic habitat. Except where absolutely necessary (as in the case of culvert replacements or extensions, and bridge removal and construction), construction equipment will not enter streams below the OHWM. In addition, streams will be dewatered prior to replacing or lengthening culverts. Dewatering and stream diversions could strand or entrain (draw in) fish and create temporary barriers to fish migration. Rivers and streams that may need to be dewatered to construct the project include Gilliam Creek, the Green River, Rolling Hills Creek, an unnamed tributary to Rolling Hills Creek, Thunder Hills Creek, an unnamed tributary to Thunder Hills Creek, Panther Creek, and the Cedar River. Dewatering of each of these waterbodies will only occur in localized areas where construction will occur. A summary of the temporary construction effects to aquatic resources can be found in Exhibit 5-5.

Exhibit 5-5: Summary of Temporary Aquatic Resource Effects

	Regulated Stream Buffer (feet)	Temporary Effect Below OHWM (square feet)	Temporary Effect to Stream Buffer (square feet)	Temporary Effects from Shading * (square feet)
Gilliam Creek	100	436	3,920	0
Green River	100	57,499	14,810	436
Panther Creek	100	3,050	6,969	0
Rolling Hills Creek	75	436	3,920	436
Unnamed tributary to Rolling Hills Creek	75	436	1,307	871
Thunder Hills Creek	75	436	4,792	0
Unnamed Tributary to Thunder Hills Creek	75	436	6,970	0
Cedar River	100	871	3,049	2,178
Total		**64,000****	**46,000****	**4,000****

*Areas of shading detail only those new areas that will be shaded and do not account for existing shaded areas. The shaded areas represent areas directly below/in the footprint of an overwater structure. Whereas other areas are shaded during a solar day, these are likely the areas where the effects and duration are the greatest.

** The total temporary effects in this table have been rounded up to the nearest 500 square feet

Some construction will likely occur during hours of darkness or reduced light. Therefore, artificial lighting will be required for some work areas. Lighting can negatively effect fish by causing fish to be attracted to the light, thereby disrupting feeding and migration patterns, and also by attracting predators to lighted areas where the fish may be congregating.

Construction noise, including driving of pilings either in-water or in-ground near a waterbody, can produce sound vibrations that propagate to nearby water and affect fish behavior. Installation of steel piles with an impact hammer can produce intense sound pressure waves that can injure and kill fish.[67] The injuries caused by such pressure waves include hemorrhage and rupture of internal organs, and damage to the auditory system. Vibratory installation of steel piles and installation of concrete piles with an impact hammer is expected to produce lower noise levels than installation of steel piles using an impact hammer, without the percussive sound pressure peaks that may cause injury to fish. Noise

[67] *NMFS, 2005*

generated during vibratory pile installation or installation of concrete piles with an impact hammer is not expected to cause peak percussive sound pressure levels capable of killing fish. In addition to sound effects from pile driving, installation of piling can result in temporary increases in sedimentation as a result of disturbing bottom sediments. Pile driving could occur in or near the Green River, Rolling Hills Creek, and the unnamed tributary to Rolling Hills Creek.

General construction noise in the vicinity of the study area waterbodies could disturb or displace fish for relatively long periods (weeks to months) at any given stream or river crossing. For all in-stream work, the work window specified in various permits and approvals will limit the potential noise effects to fish because these windows are designed to allow work when fish are less likely to be present.

To provide the room necessary to construct the project, the project construction footprint extends beyond the footprint of the new roadbed or any other new permanent structures resulting from the project. Most construction-related activities will occur within these limits.

Potential erosion due to construction of culvert extensions, retaining walls, bridges or replacements, and stormwater facility discharges of runoff could introduce fine sediments into the streams and rivers of the study area. Excessive fine sediment input into streams could smother salmon eggs in the gravel (unable to receive enough oxygen to survive), decrease micro- and macroinvertebrate survival (limit available food for fish), and create conditions where visual predators (such as coho salmon) have reduced capacity to capture prey. In addition, certain types of sediments can cause damage to the gills of fish, increasing the risk of anoxia (the absence or reduced supply of oxygen in arterial blood or tissues) and stress that can lead to fish mortality (death).

What are macroinvertebrates and microinvertebrates?

Macroinvertebrates are small animals without backbones, which are visible to the naked eye (insects, worms, larvae, etc.). Microinvertebrates are similar to macroinvertebrates, but are not visible to the naked eye. Waterbodies have communities of aquatic macro- and microinvertebrates. The species composition, species diversity, and abundance of the macro- and microinvertebrates in a given waterbody can provide valuable information on the relative health and water quality of a waterway.

The potential for erosion and sedimentation will be highest in areas where construction activities will occur within or directly adjacent to streams. Within the study area, these areas include streams that cross or flow adjacent to I-405, I-5, SR 167, and local streets where in-water (below the OHWM) or adjacent-to-water construction will occur.

Additional potential short-term effects from the project could include hazardous materials (for example, oil and gasoline),

chemical contaminants, nutrients, or other materials entering the waterbodies in the study area.

Wildlife Habitat

Permanent Effects

The constructed project will result in approximately 58 acres of new net impervious surfacing in the study area and an associated reduction of other land use cover types and associated habitats. The permanent loss of approximately 34 acres of potential habitat will affect wildlife species in the study area. Permanent removal of vegetation will eliminate habitat currently available to wildlife species. Wildlife species are likely to migrate to other portions of the study area or outside the study area to find usable and available habitat. The permanent effects to wildlife habitat are shown in Exhibit 5-6.

Exhibit 5-6: Potential Permanent Land Cover Loss In the Study Area

Land Cover	Baseline Land Cover (acres)	Permanent Land Cover Loss (acres)	Percentage of Overall Land Cover Loss
Forested	549.6	1.7	1%
Shrubs and Grasses	250.6	3.1	1%
Maintained Vegetation	1,550.2	29.2	2%
Total	**2,350.4**	**34.0**	**2%**

The forested land use cover type will be permanently reduced by approximately 1.7 acres, which is a 1 percent loss. Affected forested land cover will be converted to shrub/grass, maintained vegetation, and impervious surface cover types. Where possible, portions of the forested cover type will be preserved near the margins of the proposed roadway through avoidance and minimization measures. The shrub/grasses cover type will be permanently reduced by approximately 3.1 acres, a 1 percent loss due to roadway widening. The shrub/grasses cover type will be primarily converted to maintained vegetation and impervious surface land use cover types. The maintained vegetation cover type will be permanently reduced by approximately 29.2 acres, a 2 percent loss due to roadway widening and new roadway construction.

Most of the maintained vegetation affected will be converted to impervious surface.

Temporary Effects

Temporary effects to wildlife species include noise associated with general and localized construction activities. Wildlife species in the study area will be affected by the localized increase in noise levels. Wildlife species disturbed by this localized increase in noise will likely disperse to locations where the noise levels are decreased and only return to the disturbed areas when construction ceases. Due to the levels of noise typically associated with the I-405 and SR 167 corridors, noise levels from localized construction activities will decrease to ambient levels at approximately 1,600 feet.[68] The temporary effects to wildlife habitat are shown in Exhibit 5-7.

Exhibit 5-7: Potential Temporary Land Cover Loss In the Study Area

Land Cover	Baseline Land Cover (acres)	Permanent Land Cover Loss (acres)	Percentage of Overall Land Cover Loss
Forested	549.6	6.0	1%
Shrubs and Grasses	250.6	6.6	3%
Maintained Vegetation	1,550.2	60.7	4%
Total	**2,350.4**	**73.3**	**3%**

In addition to direct effects to wildlife, construction activities, including clearing vegetation for staging areas and access roads, will affect the land cover types and associated wildlife habitat in the study area. It is anticipated that 6 acres of forested, 6.6 acres of shrub/grasses, and 60.7 acres of maintained vegetation will be temporarily disturbed during construction activities, including vegetation clearing, material stockpiling, and staging.

Construction disturbance will result in a short-term loss of wildlife habitat. Habitat areas will be temporarily reduced until the newly planted trees, shrubs, and forbs become established. Compaction of top soils and erosion resulting from construction activities could also result in temporary

[68] *WSDOT, 2005c*

effects during re-vegetation. Soil compaction decreases moisture infiltration and can stunt new root growth of planted species. BMPs will be implemented as required in the WSDOT HRM[69] to minimize compaction, erosion, and sedimentation during construction. Land use cover types where the vegetation is cleared or trimmed will retain some habitat quality and function, although at a diminished level until the cover types are reestablished.

Will project construction affect listed species?

Several rivers and streams in the study area contain various life stages of Chinook salmon, steelhead, and bull trout, which are currently listed as threatened under the ESA. Construction activities below the OHWM will occur in the Green River, Gilliam Creek, Springbrook Creek, Panther Creek, and potentially the Cedar River, which are either known or anticipated to contain ESA listed fish species. Pile driving will occur below the OHWM of the Green River, which could affect Chinook salmon, bull trout, and steelhead trout; however, all areas where pile driving will occur will be dewatered prior to commencing pile driving to minimize effects to listed species. Additional information on the effects to fish from these activities can be found above.

How will project operation affect ecosystem elements?

No additional negative effects on wetlands, aquatic resources, or wildlife habitat are expected during operation of the Tukwila to Renton Project. Some wetlands, streams, and rivers within the study area are currently affected by routine vegetation maintenance to meet safety and operation standards as set forth by WSDOT. Wetland and riparian areas located within the right-of-way and presently subject to routine maintenance activities would likely continue to be affected by these practices and conditions.

[69] *WSDOT, 2006b*

Does the project have other effects that may be delayed or distant from the project area?

Effects that could be delayed or distant from the project include effects that induce growth and associated changes in land use, population density, or growth rate. Delayed or distant effects also include effects on air and water and other natural systems, including ecosystems.

The project is not anticipated to result in additional growth, so no delayed or distant effects from growth are expected. Other potential delayed and distant effects are discussed further below.

Wetlands

Delayed and distant effects from the project were assessed as they relate to the loss of specific wetland functions. Delayed or distant effects from the project may include a reduction in the habitat area available for wetland-dependent wildlife and changes to wetland hydrology resulting from the built project.

Wetlands and buffers affected by the project will not be available for use by wildlife as habitat. As a result, increased competition for food and refugia in the remaining wetlands may occur because of the potential influx of displaced wildlife from the affected wetlands. The likelihood and severity of delayed or distant effects caused by increased competition among wetland-dependent wildlife would be highest for wetlands with the largest quantity of potential wildlife habitat. Similarly, there would be a low likelihood and severity of delayed or distant effects to wetland-dependent wildlife in the wetlands with low wildlife habitat function before an action occurs.

Even though new impervious surfaces may not have direct effects to wetlands, new impervious surfaces could change existing drainage patterns. Adding new impervious surfaces may result in changes to stormwater conveyance, which may change the hydrology of wetlands in the study area. These changes will subsequently affect hydrology of nearby wetlands, including wetlands that occur in areas beyond the study area. The majority of wetlands in the study area are associated with ditches that also act as stormwater conveyance systems, and these conveyance systems will continue to be used after the project is complete. In addition, wetlands in the

study area do not rely solely on impervious surface runoff for hydrology.

The likelihood that a delayed or distant effect could occur as a result of the project, and the severity of that effect, are related to two primary factors: 1) the level of function provided by the affected wetland; and 2) the ability of WSDOT to mitigate for the potential effect.

Aquatic Resources

Delayed or distant effects to aquatic resources from the project include effects from potential removal of fish passage barriers and to stream buffers as a result of the replanting that will occur post construction.

Removal of fish passage barriers can result in inaccessible fish habitat becoming accessible to a variety of fish species. Opening up presently inaccessible habitat can provide fish species with new areas in which to spawn, rear, migrate, and forage, resulting in increased habitat connectivity and potential increases in fish populations. Additionally, reintroducing anadromous fish to reaches currently inhabited only by resident fish may affect the distribution and abundance of resident fish as well as prey species.

Wildlife Habitat

Delayed or distant effects from the project on wildlife habitat may include a reduction in and fragmentation of the habitat types available for wildlife. Fragmentation of existing habitat may also contribute to reducing overall habitat connectivity and impeding movement of species between divided habitats.

Were potential cumulative effects on ecosystem elements considered?

Cumulative effects for aquatic resources and wetlands are evaluated in a separate *Cumulative Effects Analysis Technical Memorandum*.[70] That report also discusses cumulative effects for this project in the areas of Air Quality, Surface Water, and Water Quality. Cumulative effects for other disciplines were determined to be unnecessary for this project.

[70] *WSDOT, 2007c*

What effects would occur under the No Build Alternative?

Wetlands

The No Build Alternative would have no new permanent, temporary, or indirect effects on wetlands in the Tukwila to Renton Project study area. No wetland or wetland buffer would be filled or cleared under this alternative, and there would be no change to current management of stormwater flows or existing wildlife habitat functions.

Many of the wetlands that occur in the right-of-way are currently affected by the lack of forested upland buffer; mowed vegetation associated with WSDOT maintenance activities; and the lack of modern stormwater control, conveyance, and management facilities. Wetlands in the study area that currently receive untreated runoff would likely continue to be affected by these conditions. Water quality in these wetlands would continue to be affected by sediment transport and erosion. It is possible that emission-reducing improvements in automobiles or increases in traffic volumes could change the concentrations of pollutants and contaminants entering these wetlands; however, there is no means to accurately predict that such changes would occur. Minor roadway safety improvements would continue to take place.

Aquatic Resources

The No Build Alternative assumes that the project will not be constructed and WSDOT will continue with ongoing maintenance activities in the study area. In this scenario, no physical changes would occur to the rivers and streams from construction activities, though some disturbance to stream buffers may occur through routine maintenance activities such as mowing or brushing. The amount of untreated stormwater entering these waterbodies from I-405, I-5, SR 181, SR 167, SR 169, and Talbot Road would remain unchanged. It is possible that emission-reducing improvements in automobiles or increases in traffic volumes could change the concentrations of pollutants and contaminants entering these streams; however, there is no means to accurately predict that such changes would occur.

The No Build Alternative would not increase impervious surface areas. Therefore, it is assumed that it would result in little change to baseline water quality in, and increased flow into, the streams and rivers in the study area. Existing fish passage barriers throughout the study area would remain. This alternative will not change the existing effects on fish and other aquatic organisms and the habitats in which they live. Minor roadway safety improvements would continue to take place, which could result in effects from construction of in-water structures or removal of riparian vegetation to accommodate construction activities.

Wildlife Habitat

The No Build Alternative would have no permanent, temporary, or indirect effects on wildlife and land use cover types in the Tukwila to Renton Project study area. No cover types would be fragmented, cleared, or converted under this alternative, and there would be no change to current existing wildlife habitat functions.

Most of the wildlife habitat that occurs in the study area is fragmented and non-forested. Vegetated cover types are dominated by invasive plants and early successional species that provide marginal wildlife benefits. Habitat quality in the right-of-way and existing cover types would continue to be degraded and affected by invasive species under the No Build Alternative. Under the No Build Alternative, normal roadway maintenance will continue including vegetation mowing and clearing to maintain roadway safety.

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SECTION 6 MEASURES TO AVOID OR MINIMIZE EFFECTS

What measures will be taken to mitigate effects before and during construction?

The measures taken to mitigate construction effects from the project include avoidance and minimization of project effects during the design process and, where effects are unavoidable, developing compensatory mitigation to offset project effects.

During design, project biologists worked with project roadway and drainage engineers to identify portions of the project with the potential to affect ecosystem elements. Where possible, the project design was altered to minimize or eliminate effects to these elements. Through this process, roadway alignments were shifted, drainage features and retaining walls were located, and other project elements were altered to reduce or eliminate the effects from these project features on ecosystem elements. Specifically, the following components were incorporated into the project:

- Retaining walls were used to limit in-water effects to Gilliam Creek, Rolling Hills Creek, an unnamed tributary to Rolling Hills Creek, Thunder Hills Creek, an unnamed tributary to Thunder Hills Creek, Panther Creek, and the Panther Creek wetlands (Wetland 24.7R).
- Roadway alignments were shifted to reduce effects to wetlands throughout the study area.
- A new bridge will be constructed over Wetland 0.9R (a former Green River channel) to avoid effects to this wetland.
- The interchange configuration constructs ramps as bridges over local/mainline roadways to minimize the project footprint.
- Bridges over the Cedar River will be free spanned.
- The new Tukwila Parkway bridge over the Green River will be free spanned and the associated approaches will include retaining walls to minimize stream buffer effects.

All in-water work will be restricted to authorized construction periods when juvenile salmon are not likely to be present in substantial numbers. Adherence to designated work windows, as defined by appropriate resource agencies

(WDFW, NMFS, and the USFWS), will also eliminate or reduce in-water interference during periods when juvenile and adult salmon are likely to be present. All fish passage structures will be designed to minimize negative effects that could result from removal of the barrier.

During stream dewatering, fish stranding and entrainment will be reduced or eliminated by following WSDOT policy, which requires that appropriate NMFS protocols for fish exclusion and handling be applied to all projects. Prior to the commencement of in-water work, all fish will be excluded (e.g., with a coffer dam) and removed from the work area with appropriate methods (e.g., electrofishing). Dewatering will occur during the driest time of the year, typically during summer months, when fish are least likely to be present. In-water construction will be limited to approved work windows, as defined by permit conditions, and in-water work will be completed in the shortest time possible.

WSDOT will restore temporarily cleared areas to pre-construction grades and replant the areas with appropriate native vegetation. BMPs will be implemented as required in the WSDOT *Highway Runoff Manual* (HRM)[71], to minimize erosion and sedimentation during construction. BMPs that WSDOT could use during construction include:

- Using effective erosion control measures, such as filter-fabric fence, straw mulch, straw bales, and plastic sheeting to prevent silt and soil from entering surface waters (including wetlands).
- Hydroseeding bare soil areas following grading.
- Clearly labeling streams and stream buffers on the construction plans and in the field.
- Demarcating clearing limits with orange barrier fencing wherever clearing is proposed in or near critical areas.
- Locating staging areas and equipment storage areas away from sensitive areas (e.g., streams and wetlands).
- Refraining from vehicle refueling and maintenance activities within 200 feet of streams, rivers, and wetlands, when possible.

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[71] *WSDOT, 2006b*

- Minimizing the duration of in-water work (below the OHWM) and strictly adhering to the appropriate fish work windows, as dictated by applicable permits.
- Prohibiting waste and excess materials from being disposed of or allowed to remain below the OHWM of streams and rivers, in critical areas, or in stream or critical area buffers.
- Preparing and adhering to a Spill Prevention, Control, and Countermeasures (SPCC) Plan for the project prior to beginning any construction, and maintaining a copy of the plan with any updates at the work site.
- Containing excavated sediment in tanks, or other appropriate containers, to avoid discharge to surface water, and transporting the contained sediments to an approved disposal site.
- Curing concrete before contact with surface water as required by WAC 110-220-070(1)(g) to avoid increased pH that can occur when fresh concrete contacts water.
- Regularly checking items such as fuel hoses, oil drums, and oil and fuel transfer valves and fittings for drips or leaks to prevent spills into surface water.
- Keeping the illuminated area and intensity of nighttime lighting to the minimum that is necessary for the intended purpose; lights will be directed onto the work areas and away from the water.

What measures will be taken to mitigate effects of operation?

Wetlands

Enhanced water quality treatment that will be installed as part of this project will improve the quality of water entering some wetlands in the study area. WSDOT will continue ongoing maintenance of stormwater treatment and detention facilities.

Aquatic Resources

The stormwater facilities that will be constructed as part of the project are intended to mitigate any flow effects that the new pavement will have on peak flows within the study area. Likewise, no negative effects to stream base flows are likely to

occur from the increase in impervious surface, as the overall amount of impervious surface resulting from the project will only slightly increase the total percentage of impervious surface in the watersheds where the project is located.

New storm drainage systems will collect runoff from an area greater than all new impervious surfaces created by the project. New stormwater features will improve water quality of stormwater runoff before discharging it into streams or rivers. Enhanced runoff treatment BMPs will be used for roadways with 30,000 or greater average daily traffic, as required by the HRM. Stormwater discharges to the streams and rivers of the study area would comply with water quality regulations. Therefore, the water quality of stormwater discharge associated with the project is not expected to adversely affect aquatic life in the streams and rivers of the study area. For more information, see the *Water Resources Discipline Report*[72] for this project.

Negative effects on stream hydrology are expected to be minimized by the following factors:

- WSDOT will provide flow control for runoff from new impervious area to address changes in stormwater discharge to streams. Stormwater flow control facilities will be designed in accordance with the WSDOT HRM.[73]
- The WSDOT HRM[74] mandates that the duration and magnitude of stormwater discharge into streams and rivers during storms will be generally equal to or less than that experienced under existing conditions for the full range of design, from 50 percent of the 2-year through the 50-year recurrent storm events.

Wildlife Habitat

No measures are necessary to mitigate for operational effects to wildlife habitat.

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[72] *WSDOT, 2007b*

[73] *WSDOT, 2006b*

[74] *WSDOT, 2006b*

What measures will be taken to mitigate effects of the constructed project?

Effects to wetlands, aquatic resources, and wildlife habitat from the project will be offset by mitigation actions. All mitigation for this project will be provided in areas where mitigation is viable in the long-term.

Wetlands

WSDOT, in partnership with the City of Renton, has developed a wetland mitigation bank called the Springbrook Creek Wetland and Habitat Mitigation Bank. WSDOT intends to use credits from this bank to mitigate for permanent effects to wetlands resulting from project construction. Mitigation banking is one early-action approach identified in the *I-405 Corridor Program Final Environmental Impact Statement*[75] and the Springbrook Creek Wetland and Habitat Mitigation Bank is part of WSDOT's watershed approach to wetland mitigation.[76] By consolidating mitigation into one large site, we have created mitigation that specifically contributes aquatic ecosystem functions that are lacking in the local watershed while providing safe, high-quality wildlife habitat away from the dangers of a roadside location.

The Springbrook Creek Wetland and Habitat Mitigation Bank is located in the Springbrook Creek watershed where the majority of the wetland effects from the project will occur. Use of this bank as mitigation for project effects will allow WSDOT to replace the water quality, hydrologic, and habitat functions that will be lost as a result of project construction.

Aquatic Resources

Aquatic resource effects will be mitigated by implementing either the Panther Creek Wetland Rehabilitation Plan (Rehabilitation Plan), or performing on-site, in-kind mitigation (such as planting native trees in an area near where trees have to be removed to construct the project), or off-site mitigation to improve habitat conditions in areas away from the project where mitigation might be more beneficial. Specific mitigation plans will be included in the permit applications for

[75] *WSDOT et al., 2002*

[76] *WSDOT et al., 2002*

construction of the Tukwila to Renton Project. In any of the mitigation scenarios, WSDOT will address over-water, in-stream, and stream buffer effects to satisfy the requirements of the local critical areas regulations, the Hydraulic Code, and ESA to enhance in-stream fish habitat to the maximum extent practicable.

The Rehabilitation Plan is an I-405 Water Resource Initiative that proposes stream mitigation for the I-405, I-5 to SR 169 Master Plan Improvements. The Rehabilitation Plan will provide phased stream mitigation (concurrent and/or advance) at a watershed level for effects from the Master Plan improvements in the I-405/SR 167 vicinity that affect the Panther Creek and lower Springbrook Creek subbasins. Highway drainage is an important factor affecting streams in the I-405 corridor. This plan also evaluates highway drainage and how it could be cost-effectively managed to complement the stream mitigation work.

The benefits of implementing this conceptual plan are to provide:

- Stream mitigation that addresses limiting factors at a watershed level
- Fish habitat improvements via stream flow management to: 1) provide more reliable stream base flows; 2) create stream flow changes that are compatible with wetland floodplain enhancement; and 3) manage stream flows to be compatible with downstream flood control needs
- Preservation of high quality forested wetlands within the contiguous Panther Creek wetland complex
- A direct discharge of treated highway stormwater into the Panther Creek wetland complex to provide additional project benefits that are compatible with the mitigation proposal

If the Rehabilitation Plan is not implemented or if WSDOT determines that additional mitigation opportunities in addition to the Rehabilitation Plan are needed, WSDOT, in cooperation with resource agencies, will help to develop alternative plans for habitat improvement, restoration, or construction to mitigate the effects of roadway widening and the increased width of stream crossings. To achieve these ends, there are several possible mitigation options:

- Remove existing overwater cover, such as the Tukwila Parkway on-ramp to I-405 or the pedestrian bridge pier in the Cedar River.
- Plant native riparian vegetation to improve habitat and provide stream shading along each of the streams where vegetation will be cleared. The extent of riparian planting will be dictated by the extent of the clearing effects. Establishing native species dominated stream buffers will increase the quantity and quality of riparian habitat over time resulting in increased shade, litterfall, and opportunity for LWD recruitment in the study area.
- Plant native riparian vegetation outside of the study area in places where restoring native stream buffers may have a greater benefit to fish and aquatic species. Mitigation could be concentrated along streams with high fish use where important stream processes and functions related to stream buffers (e.g., LWD recruitment levels, litter fall, and bank stabilization) are impaired.
- Install in-stream habitat features (e.g., LWD) in the streambed upstream or downstream of the project to increase the habitat complexity of the affected waterbody.
- Participate in an off-site mitigation opportunity, such as a mitigation bank or a restoration site identified in a regional watershed plan that will offset the effects of the project. This type of mitigation can provide watershed-scale benefits that may not be realized by providing on-site mitigation.

The effects to fish from stream buffer effects related to this project will be difficult to measure, particularly considering the already degraded condition of the existing stream buffer. Eight of the streams (Gilliam Creek, the Green River, Panther Creek, Rolling Hills Creek, an unnamed tributary to Rolling Hills Creek, Thunder Hills Creek, an unnamed tributary to Thunder Hills Creek, and the Cedar River) in the study area will experience work below the OHWM. For both stream buffer effects and work below the OHWM, on-site mitigation at the affected sites will likely not substantially improve stream functions or values in those areas based on the existing degraded condition of these streams.

Wildlife Habitat

Mitigation measures to offset project effects will include the revegetation of all temporarily disturbed soils resulting from construction activities. Planted shrubs and tree species will be maintained for a period to ensure the revegetation of target cover types. Planting will occur in areas that provide connectivity to existing wildlife habitat but still meet safety and maintenance standards set forth by WSDOT. Permanent effects to wildlife habitat will be mitigated for in accordance with applicable laws and regulations during the permitting process.

SECTION 7 UNAVOIDABLE ADVERSE EFFECTS

Will the project cause any substantial adverse effects that cannot be avoided?

Construction of the Tukwila to Renton Project will result in temporary and permanent effects to ecosystem elements including wetlands, aquatic resources, and wildlife habitat in the study area. Wetlands and their buffers will incur effects that will compromise their ability to provide water quality, hydrologic, and habitat functions. Rivers and streams will incur effects, resulting in effects to in-water and stream buffer habitat. Wildlife habitat will incur effects that will result in habitat fragmentation and loss of specific habitat types. In addition to these direct effects, each of the ecosystem elements in the study area could also experience effects that are delayed or distant from the project area. These project effects are described in greater detail earlier in this discipline report.

All project effects to ecosystem elements will be mitigated for in accordance with the requirements of applicable local, state, and federal laws. This mitigation will provide a means to offset project effects to ensure that there are no substantial adverse effects from the Tukwila to Renton Project that cannot be avoided.

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Exhibit 4-9 thru 4-11

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Exhibit 4-14 thru 4-25

GIS base data used

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APPENDIX A I-405 STREAM SURVEY METHODOLOGY

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INTERSTATE 405 Project Team
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To: I-405 Team
MAP Team

From: Derek Koellmann

Date: March 21, 2005

Re: Recommended Stream Survey Protocols

Overview

The I-405 Bellevue and Renton Improvement Project study areas cross or are located within the proximity of a variety of streams and rivers. As such, various elements of the projects have the potential to affect these waterbodies. To help determine the nature and extent of these effects, the habitat in these waterbodies must be assessed to quantitatively and qualitatively document in-stream and riparian conditions. This document describes the methodology that will be used to collect information on the physical characteristics of the streams and rivers in the study areas.

The specific habitat variables to be assessed in this study include:

a. Existing stream geomorphology
b. In-stream habitat type
c. Riparian vegetation
d. Substrate composition
e. Abundance of large woody debris
f. Quality of pools

The information collected will be used in conjunction with existing fisheries information (i.e., from existing reports and data, interviews, etc.) for the study areas to assess the quality and quantity of fish spawning, migration, and rearing habitat and provide information on the current and potential fish and other aquatic species use of the streams and rivers.

This methodology has been developed to document existing habitat in the study area in a manner that can be repeated so that future habitat conditions can be assessed post project construction.

Mercer Slough is located within the Bellevue study area, but does not fall under the definition of a stream or river per this section, nor would the protocols recommended herein be appropriate to assess the habitat values in Mercer Slough. A separate method for documenting habitat values in Mercer Slough is proposed at the end of this memo.

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Stream Survey Approach

Stream surveys will be performed on all streams and rivers that are crossed by I-405 and SR 167 or are located within the immediate proximity of the project area. The surveys will be conducted from approximately 300 feet upstream and 1,320 feet downstream (1/4 mile) of the proposed project footprint.

Up to eleven transects will be laid out perpendicular to stream flow at regularly spaced intervals along the streams to be surveyed. The minimum distance between transects will be 50 feet and the maximum distance will be 300 feet. The distance between transects will be based upon the bankfull width of the stream to be surveyed. For some streams that run parallel to I-405 or SR 167, such as Gilliam and Panther Creeks, two sets of transects may be established to ensure that habitat values throughout the stream reach are appropriately documented. Slightly different protocols will be used in wadeable versus non-wadeable streams and rivers.

At and in-between each transect qualitative and quantitative descriptions of in-stream and riparian habitat will be collected. A summary of the protocols to be used and habitat variables to be assessed is described further below. A field training day is scheduled prior to initiating the full field effort. It is anticipated that some minor adjustments to the protocols may be needed based on this training. Protocol adjustments would be considered where applicable to improve the characterization of target parameters and/or to improve sampling efficiency.

Summary of Habitat Variables and Associated Protocols

The following protocols will be used to quantify the various habitat variables.

Existing Stream Geomorphology

Existing stream geomorphology information will be collected using protocols detailed in the US Environmental Protection Agency's (EPA) document *Quantifying Physical Habitat in Wadeable Streams* by Kaufmann et al. (1999) (Quantifying Physical Habitat).

Quantifying Physical Habitat details the concepts, rationale, and analytical procedures for characterizing physical habitat in wadeable streams based on raw data generated from methods similar or equal to those of Kaufmann and Robison (1998) that are used by the U.S. Environmental Protection Agency (USEPA) in its Environmental Monitoring and Assessment Program (EMAP). Guidance is provided for calculating measures or indices of stream size and gradient, sinuosity, substrate size, habitat complexity and cover, riparian vegetation cover and structure, and anthropogenic disturbances. Two-person crews typically complete EMAP habitat measurements in 1.5 to 3.5 hours of field time per sampling reach. While this time commitment

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is greater than that required for more qualitative methods, these more quantitative methods are more repeatable (i.e., more precise).

Variables to be surveyed using Quantifying Physical Habitat

1) Wetted width
2) Bankfull width
3) Bankfull height
4) Stream depth
5) Reach Length
6) Sinuosity of Reach
7) Slope of Reach
8) Bank angles

Existing Stream Geomorphology Metrics

1) Mean and standard deviation (SD) of wetted width, bankfull width, bankfull height, stream depth, reach slope, and bank angles
2) Reach Sinuosity

In-Stream Habitat Type

In-Stream Habitat Type will be quantified using the *Timber Fish and Wildlife* (TFW) *Monitoring Program Method Manual for the Habitat Unit Survey* by Pleus et al (1999). (Habitat Unit Survey) and the EPA's *Rapid Bioassessment Protocols for Use in Streams and Rivers* by Plafkin et al. (1989) (Bioassessment Protocols).

The Habitat Unit Survey provides methods for identifying habitat units, measuring their surface area, and collecting information on residual pool depth and pool-forming factors. Other information produced includes pool:riffle ratio, length of side channels, and the frequency distribution of residual pool depths and pool-forming factors.

The Bioassessment Protocols were originally developed in the 1980's to provide cost-effective, efficient biological survey techniques. The assessment is done using a visually-based approach to characterizing the physical habitat structure of the stream site. The concepts underlying the Bioassessment Protocols are:

- Cost-effective, scientifically valid procedures for biological surveys,
- Provisions for multiple site investigations in a field season,

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- Quick turn-around of results for management decisions, and
- Scientific reports easily translated to management and the public.

Variables to be surveyed using the Habitat Unit Survey

1) Stream Discharge
2) Core Habitat Units (e.g. pool & riffle sequences)
3) Surface Area Measurements of Core Habitat Units
4) Residual Pool Depths
5) Pool Forming Factors (e.g. LWD, boulder, etc)

Variables to be surveyed using Bioassessment Protocols

1) Epifaunal substrate/available cover
2) Channel Alteration (including armoring)

In-Stream Habitat Type Metrics

1) Stream discharge (cfs)
2) % of Core Habitat Units
3) Habitat Units per Kilometer and Bankfull Width
4) Pools per Kilometer
5) Factors contributing to pool formation (PFF)
   a) % of units
   b) % of primary PFF
   c) % of pool surface area
6) Mean and SD residual pool depth
7) Mean and SD % epifaunal substrate/available cover
8) % Altered channel
9) % Streambank armoring

Riparian Vegetation

Riparian vegetation will be quantified using a combination of protocols from Quantifying Physical Habitat and Bioassessment Protocols.

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Variables to be surveyed using Quantifying Physical Habitat

1) Canopy Cover
2) Riparian Vegetative Structure

Variables to be surveyed using Bioassessment Protocols

1) Bank Stability
2) Bank Vegetative Protection
3) Riparian Vegetative Zone Width

Riparian Vegetation Metrics

1) Mean and SD of canopy densiometer values
2) % ground cover, mid layer vegetation cover, and canopy level cover, % total ground, mid layer vegetation, and canopy level cover, and % invasives
3) Mean and SD % Bank Stability
4) Mean and SD % Bank Vegetative Protection
5) Mean and SD % Riparian Vegetative Zone Width

Substrate Composition

Substrate composition information will be collected using protocols detailed in *Quantifying Physical Habitat* and *Methods for Evaluating Riparian Habitats with Applications to Management* by Platts et al. (1987) (Evaluating Riparian Habitats). For smaller stream segments where there is not adequate stream length to apply this method, a Wolman pebble count will be conducted to determine substrate composition. (Wolman 1954).

Evaluating Riparian Habitats is a comprehensive compilation of methods for resource specialists to use in managing, evaluating, and monitoring riparian conditions adjacent to streams, lakes, ponds, and reservoirs.

Variables to be surveyed using Quantifying Physical Habitat

1) Substrate Size
2) Substrate Composition

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Variables to be surveyed using Evaluating Riparian Habitats

1) Substrate Embeddedness (%)

NOTE: In non-wadeable systems, such as the Green River, substrate sizes will be estimated either visually (where possible) or by using the drag method as prescribed by Lazorchak et al. (2000) in the *Field Operations and Methods for Measuring the Ecological Condition of Non-Wadeable Rivers and Streams*.

Substrate Composition Metrics

1) Mean and SD of substrate size class
2) 75th percentile of substrate size class
3) Substrate median size class
4) 25th percentile of substrate size class
5) % breakdown of substrate size classes
6) Mean and SD % embeddedness

Abundance of Large Woody Debris

Abundance of Large Woody Debris (LWD) will be quantified using the Level 1 survey method from the TFW Monitoring Program (LWD Method) method manual for the large woody debris survey by Schuett-Hames et al.(1999).

The LWD Method provides methods for documenting the number, volume and characteristics of large woody debris pieces in stream channels. The Level 1 survey involves a rapid tally of pieces by size category and produces information on total and key LWD pieces per channel width.

Variables to be surveyed using the LWD Method

1) Number of LWD Pieces
2) Identification of Key LWD Pieces
3) Distribution of LWD in stream corridor
4) LWD jam composition

Large Woody Debris Metrics

1) % LWD pieces by size class and channel zone

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2) % key LWD pieces
3) LWD pieces per channel width
4) LWD pieces per kilometer
5) LWD jam composition by % size class

Quality of Pools

Quality of Pools will be measured using methods described in *Monitoring Protocols to Evaluate Water Quality Effects of Grazing Management on Western Rangeland Streams* by Bauer and Burton (1993) (Water Quality Effects).

Water Quality Effects describes a monitoring system to assess grazing impacts on water quality in streams o the western United States. The monitoring methods were selected for application by natural resource professionals with backgrounds in soils, range, hydrology, fisheries biology, and water quality. Though designed to be used in an agricultural environment, many of the protocols in this document (such as assessment of pool quality) can be applied over a broad geographic range.

Variables to be surveyed using the Water Quality Effects

1) Pool depth (in conjunction with the Habitat Unit Survey)
2) Substrate
3) Overhead Cover
4) Submerged Cover
5) Bank Cover

NOTE: The individual variables surveyed will be assimilated into a pool quality index that will detail habitat values for individual pools.

Quality of Pool Metrics

1) Mean and SD pool quality index

Ordinary High Water Mark (OHWM)

OHWM measurements will be conducted in accordance with the protocols contained in *A Guide for Field Identification of Bankfull Stage in the Western United States* by the USDA, Forest Service, Stream Systems Technology Center Rocky Mountain Research Station.

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The OHWM for each stream will be marked for 60 lineal feet along the stream from the proposed toe of slope of impact line. In instances where the OHWM is located more than 60 lineal feet from the proposed toe of slope of impact line OHWM will not be marked and it will be documented in a technical memorandum that the distance to the OHWM exceeds 60 lineal feet.

Establishing Reference Points

A handheld GPS unit will be used to establish reference points at the upstream and downstream end of each surveyed stream reach to allow for future surveys to be conducted within the same reach.

Photographic Documentation

Photographs will be taken at the upstream end, downstream end, and mid-point of each survey reach. In addition, significant features (e.g. LWD jams, culvert outlets, etc) will also be photographed.

Mercer Slough

Mercer Slough is a unique feature within the Bellevue study area. Several streams in the study area outlet into the slough, however the slough itself is a lacustrine (lake influenced), rather than a riverine, system. The slough is used by a variety of aquatic species and acts as a migration corridor and rearing area for salmonids in various life stages.

To assess the habitat values of Mercer Slough, habitat survey crews will determine the extent of inundated vegetated areas and deeper channel areas (those with no vegetation breaking the surface of the slough). A Differential Global Position System (DGPS) will be used to collect data along the outer margin of the wetted perimeter and deeper channel areas of Mercer Slough within the study area. This approach will provide information on the extent of the two main habitat types in Mercer Slough. A discussion of how these habitats could be affected by the project and/or used by fish could be prepared as part of the Bellevue Nickel Improvement Project Fisheries and Aquatic Resources Discipline Report. Existing information will be used to determine fish use in Mercer Slough.

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APPENDIX B I-405 STREAM SURVEY SUMMARY

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Upper Rolling Hills Creek
Habitat Survey Summary Sheet

Large Woody Debris Metrics		**In-Stream Habitat Type Metrics**	
Channel Zone 1 - Number of LWD	0	Stream Discharge	.184 cfs
Channel Zone 1 - % of total LWD	0%	HUs Per Mile	69.09
Channel Zone 2 - Number of LWD	6	Pools per Mile	8.64
Channel Zone 2 - % of total LWD	60%	Mean Residual Pool Depth (inches)	6.69
Channel Zone 3 - Number of LWD	4	SD of Residual Pool Depth	
Channel Zone 3 - % of total LWD	40%	Mean Channel Alteration	Marginal
Total number of LWD	10	Mean Left Bank Stability	Marginal
Number of Key LWD Pieces	0	Mean Right Bank Stability	Marginal
% Key LWD Pieces	0%	Mean Bank Stability	Marginal
LWD Pieces per Mile	86.36	Mean Left Bank Vegetative Protection	Marginal
		Mean Right Bank Vegetative Protection	Marginal
Existing Stream Geomorphology Metrics		Mean Vegetative Protection Overall	Marginal
Mean Wetted Width (feet)	4.72	Mean Left Bank Riparian Zone Width	Marginal
Mean Bankfull Width (feet)	8.17	Mean Right Bank Riparian Zone Width	Suboptimal
Mean Bankfull Height (feet)	0.92	Mean Riparian Zone Width	Suboptimal
Mean Stream Depth (inches)	2.64		
Mean Reach Slope	3.08%	**Substrate Composition Metrics**	
Mean Left Bank Angle	49.09°	Dominant Substrate Class Size	Sand
Mean Right Bank Angle	50.45°	% Boulder (250 to 4000 MM)	0%
SD of Wetted Width (feet)	1.71	% Cobble (64 to 255 MM)	0%
SD of Bankfull Width (feet)	2.40	% Coarse Gravel (16 to 64 MM)	27%
SD of Bankfull Height (feet)	0.16	% Fine Gravel (2 to 16 MM)	25%
SD of Stream Depth (inches)	1.64	% Sand (.06 to 2 MM)	38%
SD of Left Bank Angle	33.68°	% Silt/Sand/Muck	7%
SD of Right Bank Angle	30.53°	% Hardpan	0%
Total Stream Length Surveyed (feet)	611.41	% Wood	0%
		Mean % Embeddedness	50.91%
Quality of Pool Metrics		SD of % Embeddedness	46.40%
Mean Pool Quality Index	3.00		
SD of Pool Quality Index		**Riparian Vegetation Metrics**	
Total Number of Pools	1	% Canopy Vegetation Cover	Heavy (40-70%)
		% Mid Layer Vegetation Cover	Very Heavy (>75%)
Canopy Cover Measurements			
% Canopy Cover	97.09%		

Lower Rolling Hills Creek
Habitat Survey Summary Sheet

Large Woody Debris Metrics		**In-Stream Habitat Type Metrics**	
Channel Zone 1 - Number of LWD	0	Stream Discharge	1.437 cfs
Channel Zone 1 - % of total LWD	0%	HUs Per Mile	101.80
Channel Zone 2 - Number of LWD	0	Pools per Mile	59.39
Channel Zone 2 - % of total LWD	0%	Mean Residual Pool Depth (inches)	11.53
Channel Zone 3 - Number of LWD	0	SD of Residual Pool Depth (inches)	4.21
Channel Zone 3 - % of total LWD	0%	Mean Channel Alteration	Poor
Total number of LWD	0	Mean Left Bank Stability	Poor
Number of Key LWD Pieces	0	Mean Right Bank Stability	Poor
% Key LWD Pieces	0%	Mean Bank Stability	Poor
LWD Pieces per Mile		Mean Left Bank Vegetative Protection	Poor
		Mean Right Bank Vegetative Protection	Poor
Existing Stream Geomorphology Metrics		Mean Vegetative Protection Overall	Poor
Mean Wetted Width (feet)	7.51	Mean Left Bank Riparian Zone Width	Poor
Mean Bankfull Width (feet)	10.99	Mean Right Bank Riparian Zone Width	Poor
Mean Bankfull Height (feet)	2.23	Mean Riparian Zone Width	Poor
Mean Stream Depth (inches)	7.19		
Mean Reach Slope	1%	**Substrate Composition Metrics**	
Mean Left Bank Angle	93°	Dominant Substrate Class Size	Fine Gravel
Mean Right Bank Angle	47°	% Bedrock (smooth)	3%
SD of Wetted Width (feet)	1.02	% Boulder (250 to 4000 MM)	0%
SD of Bankfull Width (feet)	1.84	% Cobble (64 to 255 MM)	15%
SD of Bankfull Height (feet)	0.33	% Coarse Gravel (16 to 64 MM)	5%
SD of Stream Depth (inches)	4.56	% Fine Gravel (2 to 16 MM)	35%
SD of Left Bank Angle	32°	% Sand (.06 to 2 MM)	28%
SD of Right Bank Angle	26°	% Silt/Sand/Muck	15%
Total Stream Length Surveyed (feet)	622.41	% Hardpan	0%
		% Wood	4%
Quality of Pool Metrics		Mean % Embeddedness	69%
Mean Pool Quality Index	5.86	SD of % Embeddedness	34%
SD of Pool Quality Index	0.69		
Total Number of Pools	7	**Riparian Vegetation Metrics**	
		% Canopy Vegetation Cover	Sparse (<10%)
Canopy Cover Measurements		% Mid Layer Vegetation Cover	Moderate (10-40%)
% Canopy Cover	89%		

Trib to Cedar
Habitat Survey Summary Sheet

Large Woody Debris Metrics		**In-Stream Habitat Type Metrics**	
Channel Zone 1 - Number of LWD	0	Stream Discharge	
Channel Zone 1 - % of total LWD	0%	HUs Per Mile	16.98
Channel Zone 2 - Number of LWD	2	Pools per Mile	0
Channel Zone 2 - % of total LWD	25%	Mean Residual Pool Depth (inches)	
Channel Zone 3 - Number of LWD	6	SD of Residual Pool Depth (inches)	
Channel Zone 3 - % of total LWD	75%	Mean Channel Alteration	Suboptimal
Total number of LWD	8	Mean Left Bank Stability	Marginal
Number of Key LWD Pieces	0	Mean Right Bank Stability	Marginal
% Key LWD Pieces	0%	Mean Bank Stability	Marginal
LWD Pieces per Mile	135.82	Mean Left Bank Vegetative Protection	Marginal
		Mean Right Bank Vegetative Protection	Marginal
Existing Stream Geomorphology Metrics		Mean Vegetative Protection Overall	Marginal
Mean Wetted Width (feet)	1.61	Mean Left Bank Riparian Zone Width	Suboptimal
Mean Bankfull Width (feet)	5.15	Mean Right Bank Riparian Zone Width	Suboptimal
Mean Bankfull Height (feet)	1.15	Mean Riparian Zone Width	Suboptimal
Mean Stream Depth (inches)	0.67		
Mean Reach Slope	9.69%	**Substrate Composition Metrics**	
Mean Left Bank Angle	42.50	Dominant Substrate Class Size	Fine Gravel
Mean Right Bank Angle	33.33	% Boulder (250 to 4000 MM)	0%
SD of Wetted Width (feet)	0.23	% Cobble (64 to 255 MM)	0%
SD of Bankfull Width (feet)	0.98	% Coarse Gravel (16 to 64 MM)	3%
SD of Bankfull Height (feet)	0.39	% Fine Gravel (2 to 16 MM)	50%
SD of Stream Depth (inches)	0.34	% Sand (.06 to 2 MM)	47%
SD of Left Bank Angle	18.91	% Silt/Sand/Muck	0%
SD of Right Bank Angle	23.80	% Hardpan	0%
Total Stream Length Surveyed (feet)	311.01	% Wood	0%
		Mean % Embeddedness	62.67%
Quality of Pool Metrics		SD of % Embeddedness	37.87%
Mean Pool Quality Index			
SD of Pool Quality Index		**Riparian Vegetation Metrics**	
Total Number of Pools	0	% Canopy Vegetation Cover	Heavy (40-70%)
		% Mid Layer Vegetation Cover	Very Heavy (>75%)
Canopy Cover Measurements			
% Canopy Cover	95.08%		

Gilliam Creek
Habitat Survey Summary Sheet

Large Woody Debris Metrics		**In-Stream Habitat Type Metrics**	
Channel Zone 1 - Number of LWD	6	Stream Discharge	4.436 cfs
Channel Zone 1 - % of total LWD	15%	HUs Per Mile	75.31
Channel Zone 2 - Number of LWD	20	Pools per Mile	24.36
Channel Zone 2 - % of total LWD	50%	Mean Residual Pool Depth (inches)	15.35
Channel Zone 3 - Number of LWD	14	SD of Residual Pool Depth (inches)	9.25
Channel Zone 3 - % of total LWD	35%	Mean Channel Alteration	Marginal
Total number of LWD	40	Mean Left Bank Stability	Marginal
Number of Key LWD Pieces	0	Mean Right Bank Stability	Marginal
% Key LWD Pieces	0%	Mean Bank Stability	Marginal
LWD Pieces per Mile	88.60	Mean Left Bank Vegetative Protection	Poor
		Mean Right Bank Vegetative Protection	Poor
Existing Stream Geomorphology Metrics		Mean Vegetative Protection Overall	Poor
Mean Wetted Width (feet)	10.47	Mean Left Bank Riparian Zone Width	Marginal
Mean Bankfull Width (feet)	18.14	Mean Right Bank Riparian Zone Width	Marginal
Mean Bankfull Height (feet)	3.02	Mean Riparian Zone Width	Marginal
Mean Stream Depth (inches)	14.57		
Mean Reach Slope	1%	**Substrate Composition Metrics**	
Mean Left Bank Angle	64°	Dominant Substrate Class Size	Fine Gravel
Mean Right Bank Angle	55°	% Bedrock (smooth)	0%
SD of Wetted Width (feet)	1.71	% Boulder (250 to 4000 MM)	3%
SD of Bankfull Width (feet)	3.38	% Cobble (64 to 255 MM)	7%
SD of Bankfull Height (feet)	0.46	% Coarse Gravel (16 to 64 MM)	3%
SD of Stream Depth (inches)	6.96	% Fine Gravel (2 to 16 MM)	20%
SD of Left Bank Angle	28°	% Sand (.06 to 2 MM)	31%
SD of Right Bank Angle	25°	% Silt/Sand/Muck	26%
Total Stream Length Surveyed (feet)	2383.97	% Hardpan	6%
		% Wood	4%
Quality of Pool Metrics		Mean % Embeddedness	63%
Mean Pool Quality Index	5.18	SD of % Embeddedness	44%
SD of Pool Quality Index	1.4		
Total Number of Pools	11	**Riparian Vegetation Metrics**	
		% Canopy Vegetation Cover	Heavy (40-75%)
Canopy Cover Measurements		% Mid Layer Vegetation Cover	Very Heavy (>75%)
% Canopy Cover	90%		

Tributary to Gilliam Creek
Habitat Survey Summary Sheet

Large Woody Debris Metrics		**In-Stream Habitat Type Metrics**	
Channel Zone 1 - Number of LWD	0	Stream Discharge	N/A
Channel Zone 1 - % of total LWD	0%	HUs Per Mile	120.10
Channel Zone 2 - Number of LWD	0	Pools per Mile	0
Channel Zone 2 - % of total LWD	0%	Mean Residual Pool Depth (inches)	N/A
Channel Zone 3 - Number of LWD	0	SD of Residual Pool Depth (inches)	N/A
Channel Zone 3 - % of total LWD	0%	Mean Channel Alteration	Suboptimal
Total number of LWD	0	Mean Left Bank Stability	Suboptimal
Number of Key LWD Pieces	0	Mean Right Bank Stability	Suboptimal
% Key LWD Pieces	0%	Mean Bank Stability	Suboptimal
LWD Pieces per Mile	0.00	Mean Left Bank Vegetative Protection	Poor
		Mean Right Bank Vegetative Protection	Poor
Existing Stream Geomorphology Metrics		Mean Vegetative Protection Overall	Poor
Mean Wetted Width (feet)	4.48	Mean Left Bank Riparian Zone Width	Poor
Mean Bankfull Width (feet)	9.58	Mean Right Bank Riparian Zone Width	Poor
Mean Bankfull Height (feet)	4.58	Mean Riparian Zone Width	Poor
Mean Stream Depth (inches)	11.72		
Mean Reach Slope	6%	**Substrate Composition Metrics**	
Mean Left Bank Angle	39°	Dominant Substrate Class Size	Silt/Sand/Muck
Mean Right Bank Angle	16°	% Bedrock (smooth)	0%
SD of Wetted Width (feet)	0.46	% Boulder (250 to 4000 MM)	0%
SD of Bankfull Width (feet)	N/A	% Cobble (64 to 255 MM)	0%
SD of Bankfull Height (feet)	0.46	% Coarse Gravel (16 to 64 MM)	10%
SD of Stream Depth (inches)	2.14	% Fine Gravel (2 to 16 MM)	0%
SD of Left Bank Angle	30°	% Sand (.06 to 2 MM)	0%
SD of Right Bank Angle	08°	% Silt/Sand/Muck	90%
Total Stream Length Surveyed (feet)	43.97	% Hardpan	0%
		% Wood	0%
Quality of Pool Metrics		% Other	0%
Mean Pool Quality Index	N/A	Mean % Embeddedness	90%
SD of Pool Quality Index	N/A	SD of % Embeddedness	32%
Total Number of Pools	0		
		Riparian Vegetation Metrics	
Canopy Cover Measurements		% Canopy Vegetation Cover	Moderate (10-40%)
% Canopy Cover	82%	% Mid Layer Vegetation Cover	Very Heavy (>75%)

Green River
Habitat Survey Summary Sheet

Large Woody Debris Metrics		**In-Stream Habitat Type Metrics**	
Channel Zone 1 - Number of LWD	3	Stream Discharge	N/A
Channel Zone 1 - % of total LWD	38%	HUs Per (Mile)	2.68
Channel Zone 2 - Number of LWD	5	Pools per (Mile)	N/A
Channel Zone 2 - % of total LWD	63%	Mean Residual Pool Depth (inches)	N/A
Channel Zone 3 - Number of LWD	0	SD of Residual Pool Depth (inches)	N/A
Channel Zone 3 - % of total LWD	0%	Mean Channel Alteration	Poor
Total number of LWD	8	Mean Left Bank Stability	Optimal
Number of Key LWD Pieces	0	Mean Right Bank Stability	Optimal
% Key LWD Pieces	0%	Mean Bank Stability	Optimal
LWD Pieces per Mile	21.46	Mean Left Bank Vegetative Protection	Poor
		Mean Right Bank Vegetative Protection	Poor
Existing Stream Geomorphology Metrics		Mean Vegetative Protection Overall	Poor
Mean Wetted Width (feet)	92.89	Mean Left Bank Riparian Zone Width	Poor
Mean Bankfull Width (feet)	99.68	Mean Right Bank Riparian Zone Width	Poor
Mean Bankfull Height (feet)	2.53	Mean Riparian Zone Width	Poor
Mean Stream Depth (inches)	27.95		
Mean Reach Slope	N/A	**Substrate Composition Metrics**	
Mean Left Bank Angle	47°	Dominant Substrate Class Size	Boulder
Mean Right Bank Angle	38°	% Bedrock (smooth)	4%
SD of Wetted Width (feet)	9.68	% Boulder (250 to 4000 MM)	39%
SD of Bankfull Width (feet)	10.14	% Cobble (64 to 255 MM)	0%
SD of Bankfull Height (feet)	0.43	% Coarse Gravel (16 to 64 MM)	4%
SD of Stream Depth (inches)	3.34	% Fine Gravel (2 to 16 MM)	0%
SD of Left Bank Angle	11°	% Sand (.06 to 2 MM)	21%
SD of Right Bank Angle	15°	% Silt/Sand/Muck	32%
Total Stream Length Surveyed (feet)	1968.60	% Hardpan	0%
		% Wood	0%
Quality of Pool Metrics		Mean % Embeddedness	59%
Mean Pool Quality Index	N/A	SD of % Embeddedness	44%
SD of Pool Quality Index	N/A		
Total Number of Pools	N/A	**Riparian Vegetation Metrics**	
		% Canopy Vegetation Cover	Moderate (10-40%)
Canopy Cover Measurements		% Mid Layer Vegetation Cover	Very Heavy (>75%)
% Canopy Cover	15%		

Panther Creek
Habitat Survey Summary Sheet

Large Woody Debris Metrics		**In-Stream Habitat Type Metrics**	
Channel Zone 1 - Number of LWD	0	Stream Discharge	0.147 cfs
Channel Zone 1 - % of total LWD	0%	HUs Per Mile	22.51
Channel Zone 2 - Number of LWD	0	Pools per Mile	5.63
Channel Zone 2 - % of total LWD	0%	Mean Residual Pool Depth (inches)	9.84
Channel Zone 3 - Number of LWD	0	SD of Residual Pool Depth (inches)	N/A
Channel Zone 3 - % of total LWD	0%	Mean Channel Alteration	Poor
Total number of LWD	0	Mean Left Bank Stability	Suboptimal
Number of Key LWD Pieces	0	Mean Right Bank Stability	Suboptimal
% Key LWD Pieces	0%	Mean Bank Stability	Suboptimal
LWD Pieces per Mile		Mean Left Bank Vegetative Protection	Poor
		Mean Right Bank Vegetative Protection	Poor
Existing Stream Geomorphology Metrics		Mean Vegetative Protection Overall	Poor
Mean Wetted Width (feet)	3.22	Mean Left Bank Riparian Zone Width	Marginal
Mean Bankfull Width (feet)	11.94	Mean Right Bank Riparian Zone Width	Poor
Mean Bankfull Height (feet)	2.82	Mean Riparian Zone Width	Poor
Mean Stream Depth (inches)	5.51		
Mean Reach Slope	2%	**Substrate Composition Metrics**	
Mean Left Bank Angle	71°	Dominant Substrate Class Size	Silt/Sand/Muck
Mean Right Bank Angle	45°	% Bedrock (smooth)	0%
SD of Wetted Width (feet)	0.52	% Boulder (250 to 4000 MM)	4%
SD of Bankfull Width (feet)	4.10	% Cobble (64 to 255 MM)	8%
SD of Bankfull Height (feet)	0.69	% Coarse Gravel (16 to 64 MM)	0%
SD of Stream Depth (inches)	2.51	% Fine Gravel (2 to 16 MM)	8%
SD of Left Bank Angle	36°	% Sand (.06 to 2 MM)	12%
SD of Right Bank Angle	20°	% Silt/Sand/Muck	68%
Total Stream Length Surveyed (feet)	938.37	% Hardpan	0%
		% Wood	0%
Quality of Pool Metrics		% Other	0%
Mean Pool Quality Index	4	Mean % Embeddedness	87%
SD of Pool Quality Index	N/A	SD of % Embeddedness	6%
Total Number of Pools	1		
		Riparian Vegetation Metrics	
Canopy Cover Measurements		% Canopy Vegetation Cover	Absent
% Canopy Cover	53%	% Mid Layer Vegetation Cover	Moderate (10-40%)

Tributary to Rolling Hills Creek
Habitat Survey Summary Sheet

Large Woody Debris Metrics		**In-Stream Habitat Type Metrics**	
Channel Zone 1 - Number of LWD	0	Stream Discharge	N/A
Channel Zone 1 - % of total LWD	0%	HUs Per Mile	64.37
Channel Zone 2 - Number of LWD	0	Pools per Mile	0.00
Channel Zone 2 - % of total LWD	0%	Mean Residual Pool Depth (inches)	N/A
Channel Zone 3 - Number of LWD	0	SD of Residual Pool Depth (inches)	N/A
Channel Zone 3 - % of total LWD	0%	Mean Channel Alteration	Poor
Total number of LWD	0	Mean Left Bank Stability	Poor
Number of Key LWD Pieces	0	Mean Right Bank Stability	Poor
% Key LWD Pieces	0%	Mean Bank Stability	Poor
LWD Pieces per Mile		Mean Left Bank Vegetative Protection	Poor
		Mean Right Bank Vegetative Protection	Poor
Existing Stream Geomorphology Metrics		Mean Vegetative Protection Overall	Poor
Mean Wetted Width (feet)	8.56	Mean Left Bank Riparian Zone Width	Poor
Mean Bankfull Width (feet)	12.24	Mean Right Bank Riparian Zone Width	Poor
Mean Bankfull Height (feet)	1.84	Mean Riparian Zone Width	Poor
Mean Stream Depth (inches)	6.89		
Mean Reach Slope	4%	**Substrate Composition Metrics**	
Mean Left Bank Angle	46°	Dominant Substrate Class Size	Silt/Sand/Muck
Mean Right Bank Angle	57°	% Bedrock (smooth)	0%
SD of Wetted Width (feet)	14.17	% Boulder (250 to 4000 MM)	0%
SD of Bankfull Width (feet)	15.62	% Cobble (64 to 255 MM)	3%
SD of Bankfull Height (feet)	0.52	% Coarse Gravel (16 to 64 MM)	10%
SD of Stream Depth (inches)	4.48	% Fine Gravel (2 to 16 MM)	3%
SD of Left Bank Angle	16°	% Sand (.06 to 2 MM)	17%
SD of Right Bank Angle	11°	% Silt/Sand/Muck	60%
Total Stream Length Surveyed (feet)	410.13	% Hardpan	7%
		% Wood	0%
Quality of Pool Metrics		Mean % Embeddedness	83%
Mean Pool Quality Index	N/A	SD of % Embeddedness	34%
SD of Pool Quality Index	N/A		
Total Number of Pools	0	**Riparian Vegetation Metrics**	
		% Canopy Vegetation Cover	Sparse (<10%)
Canopy Cover Measurements		% Mid Layer Vegetation Cover	Heavy (40-75%)
% Canopy Cover	77%		

Springbrook Creek
Habitat Survey Summary Sheet

Large Woody Debris Metrics		**In-Stream Habitat Type Metrics**	
Channel Zone 1 - Number of LWD	0	Stream Discharge	16.907 cfs
Channel Zone 1 - % of total LWD	0%	HUs Per Mile	34.35
Channel Zone 2 - Number of LWD	0	Pools per Mile	6.87
Channel Zone 2 - % of total LWD	0%	Mean Residual Pool Depth (inches)	43.50
Channel Zone 3 - Number of LWD	0	SD of Residual Pool Depth (inches)	1.95
Channel Zone 3 - % of total LWD	0%	Mean Channel Alteration	Marginal
Total number of LWD	0	Mean Left Bank Stability	Marginal
Number of Key LWD Pieces	0	Mean Right Bank Stability	Suboptimal
% Key LWD Pieces	0%	Mean Bank Stability	Marginal
LWD Pieces per Mile		Mean Left Bank Vegetative Protection	Marginal
		Mean Right Bank Vegetative Protection	Marginal
Existing Stream Geomorphology Metrics		Mean Vegetative Protection Overall	Marginal
Mean Wetted Width (feet)	45.44	Mean Left Bank Riparian Zone Width	Marginal
Mean Bankfull Width (feet)	56.93	Mean Right Bank Riparian Zone Width	Marginal
Mean Bankfull Height (feet)	2.33	Mean Riparian Zone Width	Marginal
Mean Stream Depth (inches)	14.54		
Mean Reach Slope	1%	**Substrate Composition Metrics**	
Mean Left Bank Angle	53°	Dominant Substrate Class Size	Silt/Sand/Muck
Mean Right Bank Angle	67°	% Bedrock (smooth)	0%
SD of Wetted Width (feet)	15.72	% Boulder (250 to 4000 MM)	0%
SD of Bankfull Width (feet)	16.80	% Cobble (64 to 255 MM)	2%
SD of Bankfull Height (feet)	1.25	% Coarse Gravel (16 to 64 MM)	9%
SD of Stream Depth (inches)	8.71	% Fine Gravel (2 to 16 MM)	13%
SD of Left Bank Angle	22°	% Sand (.06 to 2 MM)	24%
SD of Right Bank Angle	28°	% Silt/Sand/Muck	46%
Total Stream Length Surveyed (feet)	1537.15	% Hardpan	0%
		% Wood	2%
Quality of Pool Metrics		% Other	4%
Mean Pool Quality Index	6.5	Mean % Embeddedness	78%
SD of Pool Quality Index	0.7	SD of % Embeddedness	37%
Total Number of Pools	2		
		Riparian Vegetation Metrics	
Canopy Cover Measurements		% Canopy Vegetation Cover	Heavy (40-75%)
% Canopy Cover	84%	% Mid Layer Vegetation Cover	Very Heavy (>75%)

Thunder Hills Creek
Habitat Survey Summary Sheet

Large Woody Debris Metrics		**In-Stream Habitat Type Metrics**	
Channel Zone 1 - Number of LWD	0	Stream Discharge	N/A
Channel Zone 1 - % of total LWD	0%	HUs Per Mile	55.52
Channel Zone 2 - Number of LWD	3	Pools per Mile	12.81
Channel Zone 2 - % of total LWD	60%	Mean Residual Pool Depth (inches)	13.26
Channel Zone 3 - Number of LWD	2	SD of Residual Pool Depth (inches)	4.98
Channel Zone 3 - % of total LWD	40%	Mean Channel Alteration	Poor
Total number of LWD	5	Mean Left Bank Stability	Optimal
Number of Key LWD Pieces	0	Mean Right Bank Stability	Optimal
% Key LWD Pieces	0%	Mean Bank Stability	Optimal
LWD Pieces per Mile		Mean Left Bank Vegetative Protection	Poor
		Mean Right Bank Vegetative Protection	Poor
Existing Stream Geomorphology Metrics		Mean Vegetative Protection Overall	Poor
Mean Wetted Width (feet)	6.00	Mean Left Bank Riparian Zone Width	Marginal
Mean Bankfull Width (feet)	8.27	Mean Right Bank Riparian Zone Width	Marginal
Mean Bankfull Height (feet)	1.71	Mean Riparian Zone Width	Marginal
Mean Stream Depth (inches)	3.85		
Mean Reach Slope	4%	**Substrate Composition Metrics**	
Mean Left Bank Angle	61°	Dominant Substrate Class Size	Other
Mean Right Bank Angle	69°	% Bedrock (smooth)	8%
SD of Wetted Width (feet)	2.72	% Boulder (250 to 4000 MM)	2%
SD of Bankfull Width (feet)	4.13	% Cobble (64 to 255 MM)	10%
SD of Bankfull Height (feet)	1.18	% Coarse Gravel (16 to 64 MM)	20%
SD of Stream Depth (inches)	2.93	% Fine Gravel (2 to 16 MM)	14%
SD of Left Bank Angle	27°	% Sand (.06 to 2 MM)	10%
SD of Right Bank Angle	26°	% Silt/Sand/Muck	2%
Total Stream Length Surveyed (feet)	1236.28	% Hardpan	0%
		% Wood	0%
Quality of Pool Metrics		% Other	34%
Mean Pool Quality Index	5	Mean % Embeddedness	22%
SD of Pool Quality Index	2.65	SD of % Embeddedness	7%
Total Number of Pools	3		
		Riparian Vegetation Metrics	
Canopy Cover Measurements		% Canopy Vegetation Cover	Sparse (<10%)
% Canopy Cover	74%	% Mid Layer Vegetation Cover	Heavy (40-75%)

Cottage Creek
Habitat Survey Summary Sheet

Large Woody Debris Metrics		**In-Stream Habitat Type Metrics**	
Channel Zone 1 - Number of LWD	0	Stream Discharge	N/A
Channel Zone 1 - % of total LWD	0%	HUs Per Mile	434.96
Channel Zone 2 - Number of LWD	0	Pools per Mile	0.00
Channel Zone 2 - % of total LWD	0%	Mean Residual Pool Depth (inches)	N/A
Channel Zone 3 - Number of LWD	0	SD of Residual Pool Depth (inches)	N/A
Channel Zone 3 - % of total LWD	0%	Mean Channel Alteration	N/A
Total number of LWD	0	Mean Left Bank Stability	N/A
Number of Key LWD Pieces	0	Mean Right Bank Stability	N/A
% Key LWD Pieces	0%	Mean Bank Stability	N/A
LWD Pieces per Mile	0.00	Mean Left Bank Vegetative Protection	N/A
		Mean Right Bank Vegetative Protection	N/A
Existing Stream Geomorphology Metrics		Mean Vegetative Protection Overall	N/A
Mean Wetted Width (feet)	N/A	Mean Left Bank Riparian Zone Width	N/A
Mean Bankfull Width (feet)	N/A	Mean Right Bank Riparian Zone Width	N/A
Mean Bankfull Height (feet)	N/A	Mean Riparian Zone Width	N/A
Mean Stream Depth (inches)	N/A		
Mean Reach Slope	N/A	**Substrate Composition Metrics**	
Mean Left Bank Angle	N/A	Dominant Substrate Class Size	N/A
Mean Right Bank Angle	N/A	% Bedrock (smooth)	N/A
SD of Wetted Width (feet)	N/A	% Boulder (250 to 4000 MM)	N/A
SD of Bankfull Width (feet)	N/A	% Cobble (64 to 255 MM)	N/A
SD of Bankfull Height (feet)	N/A	% Coarse Gravel (16 to 64 MM)	N/A
SD of Stream Depth (inches)	N/A	% Fine Gravel (2 to 16 MM)	N/A
SD of Left Bank Angle	N/A	% Sand (.06 to 2 MM)	N/A
SD of Right Bank Angle	N/A	% Silt/Sand/Muck	N/A
Total Stream Length Surveyed (feet)	12.14	% Hardpan	N/A
		% Wood	N/A
Quality of Pool Metrics		Mean % Embeddedness	N/A
Mean Pool Quality Index	0	SD of % Embeddedness	N/A
SD of Pool Quality Index	0		
Total Number of Pools	0	**Riparian Vegetation Metrics**	
		% Canopy Vegetation Cover	N/A
Canopy Cover Measurements		% Mid Layer Vegetation Cover	N/A
% Canopy Cover	N/A		

APPENDIX C WETLAND FIELD DATA FORMS

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The following describes the abbreviation used to describe the mottle abundance, mottle size, and mottle contrast when examining soils. The abbreviations were used on the routine wetland delineation forms which were completed in the field:

Mottle Abundance:
f - Few (<20%)
c- Common (2%-20%)
m - Many (> 20%)

Mottle Size:
f - Fine (0-5mm)
m - Medium (5-15mm)
c - Coarse (>15mm)

Mottle Contrast:
f - Faint
d - Distinct
p - Prominent

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: I-405 S. RENTON NICKEL PROJECT	Date: 3/18/05
Applicant/owner: WSDOT	County: KING State: WA
Investigator(s): AM, JL	S/T/R: 23/23N/4E
Do Normal Circumstances exist on the site? (yes) no Is the site significantly disturbed (atypical situation)? yes (no) Is the area a potential Problem Area? yes (no) Explanation of atypical or problem area:	Community ID: U Transect ID: Plot ID: DP-A 0.1R

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Rubus discolor	S	60	FACU				
Holcus lanatus	H	30	FAC				
Juncus effusus	H	10	FACW				
Ranunculus repens	H	10	FACW				
Cytisus scoparius	S	10	NL				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 50

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	____	Physiological/reproductive adaptations	____
		Wetland plant database	____
Morphological adaptations	____	Personal knowledge of regional plant communities	____
Technical Literature	____	Other (explain)	____

Hydrophytic vegetation present? yes (no)
Rationale for decision/Remarks: Vegetation maintained/mowed regularly, Not more than 50% of dominants are OBL, FACW, or FAC

HYDROLOGY

Is it the growing season? (yes) no

Based on: ____ soil temp (record temp ____)
DATE other (explain)

Dept. of inundation:	— inches	Water Marks: yes (no) on ____	Sediment Deposits: yes (no)
		Drift Lines: yes (no)	Drainage Patterns: yes (no)
Depth to free water in pit:	>16 inches	Oxidized Root (live roots) Channels <12 in. yes (no)	Local Soil Survey: yes (no)
Depth to saturated soil:	>16 inches	FAC Neutral: yes (no)	Water-stained Leaves yes (no)

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? yes (no)
Rationale for decision/Remarks: No indicators present. Area drains downslope to WL 0.1R

SOILS

Map Unit Name (Series & Phase): Urban land

Drainage Class: Variable

Taxonomy (subgroup): NA

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-6	A	10YR 3/2	—	—	Sandy loam	
6-16+	B	10YR 4/3	7.5YR 3/4	few fine distinct	[illegible] loam	
	sub-clay matrix	2.5Y 5/4				

Hydric Soil Indicators: (check all that apply)

- _____ Histosol
- _____ Histic Epipedon
- _____ Sulfidic Odor
- _____ Aquic Moisture Regime
- _____ Reducing Conditions
- _____ Gleyed or Low-Chroma (=1) matrix
- _____ Matrix chroma ≤ 2 with mottles
- _____ Mg or Fe Concretions
- _____ High Organic Content in Surface Layer of Sandy Soils
- _____ Organic Streaking in Sandy Soils
- _____ Listed on National/Local Hydric Soils List
- _____ Other (explain in remarks)

Hydric soils present? yes (no)

Rationale for decision/Remarks:
Soil does not contain sufficient hydric indicators.

Wetland Determination (circle)

Hydrophytic vegetation present?	yes	(no)			
Hydric soils present?	yes	(no)	Is the sampling point within a wetland?	yes	(no)
Wetland hydrology present?	yes	(no)			

Rationale/Remarks:
~~Not applicable~~ None of the three criteria are met.

NOTES: DP-A is located east of WL 0.1R on a north-facing slope. Area receives road runoff from adjacent freeway off ramps, but drainage continues downslope to base of gully and road impoundment.

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: I-405 S, RENTON NICKEL	Date: 3/18/05
Applicant/owner: WSDOT	County: KING
Investigator(s): AM, IL	State: WA S/T/R: 03/23N/4E
Do Normal Circumstances exist on the site? (yes) no Is the site significantly disturbed (atypical situation)? yes (no) Is the area a potential Problem Area? yes (no) Explanation of atypical or problem area:	Community ID: Transect ID: Plot ID: DP-B 0.1R

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Phalaris arundinacea	H	40	FACW				
Juncus effusus	H	30	FACW				
Carex obnupta	H	10	FACW				
Rubus discolor	S	30	FAC				
Agrostis sp	H	20	FAC				
Holcus lanatus	H	10	FAC				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 80%

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	X	Physiological/reproductive adaptations	____
		Wetland plant database	____
Morphological adaptations	____	Personal knowledge of regional plant communities	____
Technical Literature	____	Other (explain)	____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
More than 50% of dominants are OBL, FACW or FAC

HYDROLOGY

Is it the growing season? (yes) no

Based on: ____ soil temp (record temp ____)
DATE other (explain)

Dept. of inundation: ____ inches

Depth to free water in pit: 15 inches
Depth to saturated soil: 0 inches

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Water Marks: yes (no) on ____	Sediment Deposits: yes (no)
Drift Lines: yes (no)	Drainage Patterns: (yes) no
Oxidized Root (live roots) Channels <12 in. yes no	Local Soil Survey: yes (no)
FAC Neutral: (yes) no	Water-stained Leaves yes (no)
Other (explain):	

Wetland hydrology present? (yes) no
Rationale for decision/Remarks:
Standing water present in my 5% of wetland. Soils saturated to surface in data pit.

SOILS

Map Unit Name (Series & Phase): Urban land

Drainage Class: Variable

Taxonomy (subgroup): NA

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-8	A	10YR 2/2	—	—	Sandy loam	
8-16+	B	2.5Y 4/1	7.5YR 4/4	distinct common fine	clay loam	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- X Gleyed or Low-Chroma (=1) matrix
- X Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:
Soil contains low chroma & mottles

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no			
Hydric soils present?	(yes)	no	Is the sampling point within a wetland?	(yes)	no
Wetland hydrology present?	(yes)	no			

Rationale/Remarks:
All three criteria are met - indicators present during early portion of growing season.

NOTES: DP-B is located in WL 01R, a PEM wetland immediately next I-5 - Between I-5 NB lanes and ~~SB~~ NB exit lane that goes to 518 Burien, South of I-405.
Wetland receives road runoff that sheet flows down slopes / road shoulders - topography forms a gully that slopes to north - wetland located where gully meets 405 and drainage is impounded.

Revised 4/97

DRAFT WETLAND RATING FORM – WESTERN WASHINGTON

Name of wetland (if known): O.1R

Location: SEC: 23 TWNSHP: 23N RNGE: 4E (attach map with outline of wetland to rating form) WSDOT 405 Project

Person(s) Rating Wetland: A. Merrill Affiliation: S. Renton Nickel Date of site visit: 3/18/05

DRAFT SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___ IV X

Category I = Score >70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	10
Score for Hydrologic Functions	4
Score for Habitat Functions	8
TOTAL score for functions	22

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ **Does not Apply** X

Final Category (choose the "highest" category from above) IV

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X		

Does the wetland being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
SP1. *Has the wetland been documented as a habitat for any Federally listed Threatened or Endangered plant or animal species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland been documented as habitat for any State listed Threatened or Endangered plant or animal species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database.		X
SP3. *Does the wetland contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

Wetland Name: _____ **Date:** _____

1. Are the water levels in the wetland usually controlled by tides (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. Is the topography within the wetland flat and precipitation is only source (>90%) of water to it.
NO – go to 3 **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the wetland **meet both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) where at least 20 acres (8 ha) are permanently inundated (ponded or flooded);
___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the wetland **meet all** of the following criteria?
____The wetland is on a slope (*slope can be very gradual*),
____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
____The water leaves the wetland **without being impounded**?
NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks(depressions are usually <3ft diameter and less than 1 foot deep).*
NO - go to 5 **YES** – The wetland class is **Slope**

5. Is the wetland in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river? The flooding should occur at least once every two years, on the average, to answer "yes." *The wetland can contain depressions that are filled with water when the river is not flooding.*
NO - go to 6 **YES** – The wetland class is **Riverine**

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

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

7. Is the wetland located in a very flat area with no obvious depression and no stream or river running through it and providing water. The wetland seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

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

8. Your wetland seems to be difficult to classify. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. Sometimes we find characteristics of several different hydrogeomorphic classes within one wetland boundary. Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland being rated. If the area of the second class is less than 10% classify the wetland using the first class.

HGM Classes Within a Delineated Wetland Boundary	*Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

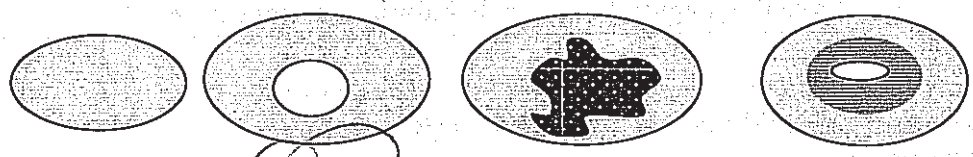
D	Depressional and Flats Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
D	**D 1. Does the wetland have the potential to improve water quality?** *(see p. 38)*	
D	D 1.1 Characteristics of surface water flows out of the wetland: Wetland is a depression with no surface water outlet — points = 3 Wetland has an intermittently flowing, or highly constricted, outlet — points = 2 Wetland has an unconstricted surface outlet — points = 1 Wetland is flat and has no obvious outlet and/or outlet is a ditch — points = 1	2
D	D 1.2 The soil 2 inches below the surface is clay, organic, or smells anoxic (hydrogen sulfide or rotten eggs). YES — points = 4 NO — points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest class): Wetland has persistent, ungrazed, vegetation > = 95% of area — points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area — points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area — points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area — points = 0	3
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland — points = 4 Area seasonally ponded is > ¼ total area of wetland — points = 2 Area seasonally ponded is < ¼ total area of wetland — points = 0 NOTE: *See text for indicators of seasonal and permanent inundation..*	0
D	**Total for D 1** *Add the points in the boxes above*	5
D	**D 2. Does the wetland have the opportunity to improve water quality?** *(see p. 44)* Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants.* — Grazing in the wetland or within 150 ft ✓ Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other _____ YES multiplier is 2 NO multiplier is 1	multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 *Add score to table on p. 1*	10

D	Depressional and Flats Wetlands	Points
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation	
	D 3. Does the wetland have the <u>potential</u> to reduce flooding and erosion? *(see p. 46)*	
D	D 3.1 Characteristics of surface water flows out of the wetland Wetland has no surface water outlet points = 4 Wetland has an intermittently flowing, or highly constricted, outlet (points = 2) Wetland is flat and has no obvious outlet and/or outlet is a small ditch points = 1 Wetland has an unconstricted surface outlet points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet* Marks of ponding are 3 ft or more above the surface points = 7 The wetland is a "headwater" wetland" points = 5 Marks of ponding between 2 ft to < 3 ft from surface points = 5 Marks are at least 0.5 ft to < 2 ft from surface points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (points = 0)	0
D	D 3.3 Contribution of wetland to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland itself.* The area of the basin is less than 10 times the area of wetland points = 5 The area of the basin is 10 to 100 times the area of the wetland points = 3 estimate → The area of the basin is more than 100 times the area of the wetland (points = 0) Wetland is in the FLATS class (basin = the wetland, by definition) points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	2
D	**D 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** *(see p. 49)* Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems X Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other _____ (YES) multiplier is 2 **NO** multiplier is 1	multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 *Add score to table on p. 1*	4

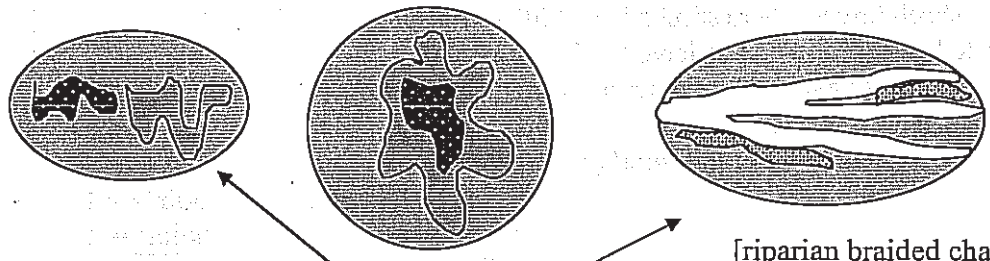
These questions apply to wetlands of all HGM classes.	Points
HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat	
H 1. Does the wetland have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin) if the class covers more than 10% of the area of the wetland or ¼ acre.* ___Aquatic bed _X_Emergent plants _X_Scrub/shrub (areas where shrubs have >30% cover) ___Forested (areas where trees have >30% cover) ___Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) *Add the number of vegetation types that qualify. If you have:* 4 types or more — points = 4 3 types — points = 2 2 types — (points = 1) 1 type — points = 0	1
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ___Permanently flooded or inundated ___Seasonally flooded or inundated _X_Occasionally flooded or inundated _X_Saturated only ___Permanently flowing stream or river in, or adjacent to, the wetland ___Seasonally flowing stream in, or adjacent to, the wetland ___***Lake-fringe wetland* = 2 points** ___***Freshwater tidal wetland* = 2 points** 4 or more types present — points = 3 3 types present — points = 2 2 types present — (point = 1)	1
H 1.3. Richness of Plant Species *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* *List species below if you want to:* If you counted: > 19 species — points = 2 5 - 19 species — (points = 1) < 5 species — points = 0	1

H 1.4. Interspersion of habitats *(see p. 76)*

Decided from the diagrams below whether interspersion between types of vegetation (described in H 1.1), or vegetation types and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



None = 0 points Low = 1 point Moderate = 2 points



[riparian braided channels]

High = 3 points

NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".

1

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

____Standing snags (diameter at the bottom > 4 inches) in the wetland

____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m)

____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present

____At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*

____Invasive plants cover less than 25% of the wetland area in each stratum of plants

0

H 1. TOTAL Score - potential for providing habitat
Add the scores in the column above

4

Comments

H 2. Does the wetland have the opportunity to provide habitat for many species?

H 2.1 Buffers *(see p. 80)*

Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. **(relatively undisturbed also means no-grazing)** **Points = 5**

— 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4**

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3**

If buffer does not meet any of the three criteria above

— No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— Heavy grazing in buffer. **Points = 1**

— Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.**

X — Buffer does not meet any of the criteria above. **Points = 1**

1

H 2.2 Corridors and Connections *(see p. 81)*

H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*).

YES = **4 points** (*go to H 2.3*) (NO) = go to H 2.2.2

H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above?

YES = **2 points** (*go to H 2.3*) (NO) = H 2.2.3

0

H 2.2.3 Is the wetland:

within 5 mi (8km) of a brackish or salt water estuary OR
within 3 mi of a large field or pasture (>40 acres) OR
within 1 mi of a lake greater than 20 acres?

YES = **1 point** (NO) = **0 points**

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)*

Which of the following priority habitats are within 330ft (100m) of the wetland?
(see text for a more detailed description of these priority habitats)

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

____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

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

____**Old-growth forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age.

____**Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____**Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.

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

____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages

____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____**Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____**Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5% during the period of average annual low flow. Includes both estuaries and lagoons.

_____**Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has **3 or more** priority habitats = **4 points**
If wetland has 2 priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** No habitats = 0 points

0

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits) (see p. 84)* There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5. There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores in the column above*	4
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	8

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: I-405 South Renton Nicker
Date: 2/2/05
Applicant/owner: WSDOT
County: King
Investigator(s): AM, IL
State: WA
S/T/R: 23/23N/4E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID: 25
Transect ID:
Plot ID: DP-A 0.15R

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Rubus discolor	S	100	FACU				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 0

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation ____
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations ____
Wetland plant database ____
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? yes (no)
Rationale for decision/Remarks:
Only one dominant present - FACU

HYDROLOGY

Is it the growing season? yes (no)

Based on: ____ soil temp (record temp ____)
DATE other (explain)

Dept. of inundation: — inches
Depth to free water in pit: >16 inches
Depth to saturated soil: 0 inches

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Water Marks: yes (no) on ____
Drift Lines: yes (no)
Oxidized Root (live roots) Channels <12 in. yes no
FAC Neutral: yes (no)
Sediment Deposits: yes (no)
Drainage Patterns: yes (no)
Local Soil Survey: yes (no)
Water-stained Leaves yes (no)
Other (explain):

Wetland hydrology present? yes (no)
Rationale for decision/Remarks:
Area not likely saturated due to gravelly soils.

SOILS

Map Unit Name (Series & Phase) Urban Land

Drainage Class Variable

Taxonomy (subgroup) NA

Field observations confirm mapped type? Yes (No)

Profile Description						
Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-6	A	10YR 3/1	-	-	Sandy loam	
6-16	B	2.5Y 3/2	-	-	sandy loam	

Hydric Soil Indicators: (check all that apply)

- _____ Histosol
- _____ Histic Epipedon
- _____ Sulfidic Odor
- _____ Aquic Moisture Regime
- _____ Reducing Conditions
- _____ Gleyed or Low-Chroma (=1) matrix
- _____ Matrix chroma ≤ 2 with mottles
- _____ Mg or Fe Concretions
- _____ High Organic Content in Surface Layer of Sandy Soils
- _____ Organic Streaking in Sandy Soils
- _____ Listed on National/Local Hydric Soils List
- _____ Other (explain in remarks)

Hydric soils present? yes (no)

Rationale for decision/Remarks: No redox features or chroma 1 in root zone. Marginal Indicators.

Wetland Determination (circle)

Hydrophytic vegetation present?	yes	(no)			
Hydric soils present?	yes	(no)	Is the sampling point within a wetland?	yes	(no)
Wetland hydrology present?	yes	(no)			

Rationale/Remarks:

No cattails present. Plot very near upland/wetland border.

NOTES:

DP-B: just outside 0.15R wetland border. RUDI dominated area adjacent to Gilliam Creek. Soils have marginal indicators; plot area is likely not saturated in growing season due to sandy soils. Area disturbed creek banks.

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: 1405 South Renton Nickel
Date: 7/2/05
Applicant/owner: WSDOT
County: King
State: WA
Investigator(s): IL, AM
S/T/R: 23/23N/4E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID: PC
Transect ID:
Plot ID: DP-B. WL 0.15R

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Phalaris arundinacea	H	100	FACW				
Rubus discolor	S	5	FACU				
Thuja plicata - planted sapling	T	2	FAC				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	____	Physiological/reproductive adaptations	____
Morphological adaptations	____	Wetland plant database	____
Technical Literature	____	Personal knowledge of regional plant communities	____
		Other (explain)	____

Hydrophytic vegetation present? (yes) **no**
Rationale for decision/Remarks:
All dominants are FAC or wetter.

HYDROLOGY

Is it the growing season? yes (no)

Based on: _____ soil temp (record temp _____)
DATE other (explain)

Dept. of inundation: — inches

Depth to free water in pit: 6 inches
Depth to saturated soil: 0 inches

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Water Marks: (yes) no on _____		Sediment Deposits: (yes) no
Drift Lines: yes (no)		Drainage Patterns: (yes) no
Oxidized Root (live roots) Cbannels <12 in. yes no		Local Soil Survey: yes (no)
FAC Neutral: (yes) no		Water-stained Leaves (yes) no

Other (explain):

Wetland hydrology present? (yes) **no**
Rationale for decision/Remarks:
Soils are saturated to surface and areas of ponding are present. This area is likely saturated early in the growing season.

SOILS

Map Unit Name (Series & Phase): Urban Land

Drainage Class: variable

Taxonomy (subgroup): NA

Field observations confirm mapped type? Yes (No)

Profile Description						
Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-7	A	2.5y 3/1	–	–	clay loam	
7-16	B	2.5y 3/1	7.5yR 3/3	faint common medium	clay loam	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- X Gleyed or Low-Chroma (=1) matrix
- X Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:
Soil contains hydric indicators.

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no			
Hydric soils present?	(yes)	no	Is the sampling point	(yes)	no
Wetland hydrology present?	(yes)	no	within a wetland?		

Rationale/Remarks:
All three criteria are met.

NOTES:

DP-B is located in the eastern portion of WL 0.15R. This PEM wetland is associated with Gilliam Creek and contains large area of PITAR with some planted trees and shrubs – [Area is previous WSDOT mitigation site (info from Terry Drachak).] Forested area assoc w/ creek channel in western portion – planted oak sp. and ALRU.

Revised 4/97

DRAFT WETLAND RATING FORM – WESTERN WASHINGTON

Name of wetland (if known): Wetland 0.15R

Location: SEC: 23 TWNSHP: 23N RNGE: 4E (attach map with outline of wetland to rating form)

Person(s) Rating Wetland: A. Merrill Affiliation: S. Renton Date of site visit: 2/2/05

Insert 405 Project

DRAFT SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III X IV___

Category I = Score >70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	16
Score for Hydrologic Functions	8
Score for Habitat Functions	16
TOTAL score for functions	40

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ **Does not Apply**___

Final Category (choose the "highest" category from above) III

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X		

Does the wetland being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
SP1. *Has the wetland been documented as a habitat for any Federally listed Threatened or Endangered plant or animal species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland been documented as habitat for any State listed Threatened or Endangered plant or animal species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database.		
SP3. *Does the wetland contain individuals of Priority species listed by the WDFW for the state?*		
SP4. *Does the wetland have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

look at PHS data

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

Wetland Name: _____ **Date:** _____

1. Are the water levels in the wetland usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. Is the topography within the wetland flat and precipitation is only source (>90%) of water to it.
   NO – go to 3 **YES** – The wetland class is **Flats**

   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the wetland **meet both** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) where at least 20 acres (8 ha) are permanently inundated (ponded or flooded);
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the wetland **meet all** of the following criteria?
   ____The wetland is on a slope (*slope can be very gradual*),
   ____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ____The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks(depressions are usually <3ft diameter and less than 1 foot deep).*
   NO - go to 5 **YES** – The wetland class is **Slope**

5. Is the wetland in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river? The flooding should occur at least once every two years, on the average, to answer "yes." *The wetland can contain depressions that are filled with water when the river is not flooding.*
   NO - go to 6 **YES** – The wetland class is **Riverine**

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

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

7. Is the wetland located in a very flat area with no obvious depression and no stream or river running through it and providing water. The wetland seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

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

8. Your wetland seems to be difficult to classify. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. Sometimes we find characteristics of several different hydrogeomorphic classes within one wetland boundary. Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland being rated. If the area of the second class is less than 10% classify the wetland using the first class.

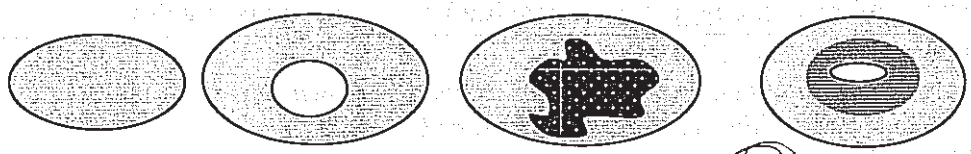
D	Depressional and Flats Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
D	**D 1. Does the wetland have the potential to improve water quality?** *(see p. 38)*	
D	D 1.1 Characteristics of surface water flows out of the wetland: Wetland is a depression with no surface water outlet — points = 3 Wetland has an intermittently flowing, or highly constricted, outlet — points = 2 Wetland has an unconstricted surface outlet — points = 1 Wetland is flat and has no obvious outlet and/or outlet is a ditch — points = 1	1
D	D 1.2 The soil 2 inches below the surface is clay, organic, or smells anoxic (hydrogen sulfide or rotten eggs). YES — points = 4 NO — points = 0	4
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest class): Wetland has persistent, ungrazed, vegetation >= 95% of area — points = 5 Wetland has persistent, ungrazed, vegetation >= 1/2 of area — points = 3 Wetland has persistent, ungrazed vegetation >= 1/10 of area — points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area — points = 0	3
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland — points = 4 Area seasonally ponded is > ¼ total area of wetland — points = 2 Area seasonally ponded is < ¼ total area of wetland — points = 0 NOTE: *See text for indicators of seasonal and permanent inundation..*	0
D	**Total for D 1** *Add the points in the boxes above*	8
D	**D 2. Does the wetland have the opportunity to improve water quality?** *(see p. 44)* Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants.* — Grazing in the wetland or within 150 ft X Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ YES multiplier is 2 NO multiplier is 1	multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 *Add score to table on p. 1*	16

D	Depressional and Flats Wetlands	Points
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation	
	D 3. Does the wetland have the potential to reduce flooding and erosion? *(see p. 46)*	
D	D 3.1 Characteristics of surface water flows out of the wetland Wetland has no surface water outlet — points = 4 Wetland has an intermittently flowing, or highly constricted, outlet — points = 2 Wetland is flat and has no obvious outlet and/or outlet is a small ditch — points = 1 Wetland has an unconstricted surface outlet — points = 0	0
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet* Marks of ponding are 3 ft or more above the surface — points = 7 The wetland is a "headwater" wetland" — points = 5 Marks of ponding between 2 ft to < 3 ft from surface — points = 5 Marks are at least 0.5 ft to < 2 ft from surface — points = 3 Wetland is flat but has small depressions on the surface that trap water — points = 1 Marks of ponding less than 0.5 ft — points = 0	1
D	D 3.3 Contribution of wetland to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland itself.* The area of the basin is less than 10 times the area of wetland — points = 5 estimate → The area of the basin is 10 to 100 times the area of the wetland — points = 3 The area of the basin is more than 100 times the area of the wetland — points = 0 Wetland is in the FLATS class (basin = the wetland, by definition) — points = 5	3
D	**Total for D 3** *Add the points in the boxes above*	4
D	**D 4. Does the wetland have the opportunity to reduce flooding and erosion?** *(see p. 49)* Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems ✓ Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other _____ **YES** multiplier is 2 **NO** multiplier is 1	multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 *Add score to table on p. 1*	8

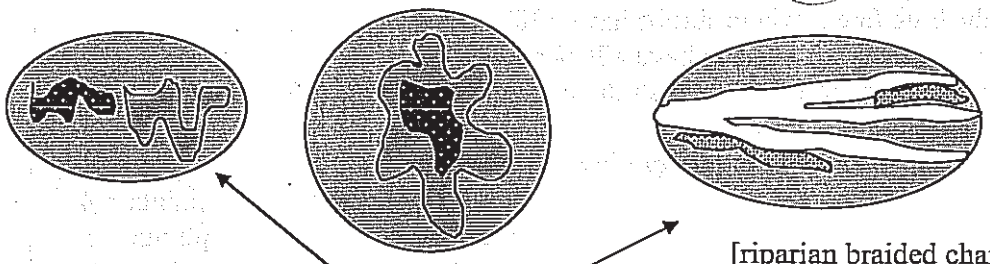
These questions apply to wetlands of all HGM classes.	Points
HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat	
H 1. Does the wetland have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin) if the class covers more than 10% of the area of the wetland or ¼ acre.* ___ Aquatic bed __X__ Emergent plants __X__ Scrub/shrub (areas where shrubs have >30% cover) __X__ Forested (areas where trees have >30% cover) __X__ Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) *Add the number of vegetation types that qualify. If you have:* 4 types or more — points = 4 3 types — points = 2 2 types — points = 1 1 type — points = 0	4
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ___ Permanently flooded or inundated __X__ Seasonally flooded or inundated __X__ Occasionally flooded or inundated __X__ Saturated only __X__ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** 4 or more types present — points = 3 3 types present — points = 2 2 types present — point = 1	3
H 1.3. Richness of Plant Species *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* *List species below if you want to:* If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	1

H 1.4. Interspersion of habitats *(see p. 76)*

Decided from the diagrams below whether interspersion between types of vegetation (described in H 1.1), or vegetation types and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



None = 0 points Low = 1 point Moderate = 2 points



High = 3 points [riparian braided channels]

NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".

2

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

X Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

____ Standing snags (diameter at the bottom > 4 inches) in the wetland

____ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m)

____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present

____ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)*

____ Invasive plants cover less than 25% of the wetland area in each stratum of plants

1

H 1. TOTAL Score - potential for providing habitat
Add the scores in the column above

3

Comments

H 2. Does the wetland have the opportunity to provide habitat for many species?

H 2.1 Buffers *(see p. 80)*

Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. **(relatively undisturbed also means no-grazing)** **Points = 5**

— 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4**

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3**

If buffer does not meet any of the three criteria above

— No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— Heavy grazing in buffer. **Points = 1**

— Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.**

— Buffer does not meet any of the criteria above. **Points = 1**

1

H 2.2 Corridors and Connections *(see p. 81)*

H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*).

YES = 4 points (*go to H 2.3*) NO = go to H 2.2.2

H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above?

YES = 2 points (*go to H 2.3*) NO = H 2.2.3

H 2.2.3 Is the wetland:

within 5 mi (8km) of a brackish or salt water estuary OR
within 3 mi of a large field or pasture (>40 acres) OR
within 1 mi of a lake greater than 20 acres?

YES = 1 point NO = 0 points

0

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)*

Which of the following priority habitats are within 330ft (100m) of the wetland?
(see text for a more detailed description of these priority habitats)

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

____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

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

____ **Old-growth forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age.

____ **Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____ **Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.

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

____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages

____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____ **Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5% during the period of average annual low flow. Includes both estuaries and lagoons.

____ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has **3 or more** priority habitats = **4 points**
If wetland has 2 priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** No habitats = 0 points

1

H 2:4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores in the column above*	5
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	16

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: I 405 South Renton Nickel
Date: 2/2/05
Applicant/owner: WSDOT
County: KING
State: WA
Investigator(s): AM, IL
S/T/R: 23/23N/4E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID: U
Transect ID:
Plot ID: PP-A WL 0.25M

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Phalaris arundinacea	H	90	FACW				
Festuca arundinacea	H	10	FACU				
Rubus discolor	S	2	FACU				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation ____
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations ____
Wetland plant database ____
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
More than 50% of dominants are OBL, FACW, FAC
Vegetation is mowed & maintained.

HYDROLOGY

Is it the growing season? yes (no)

Based on: ____ soil temp (record temp ____)
DATE other (explain)

Dept. of inundation: — inches

Depth to free water in pit: >16 inches
Depth to saturated soil: >16 inches

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Water Marks: yes (no) on ____
Drift Lines: yes (no)
Oxidized Root (live roots) Channels <12 in. yes (no)
FAC Neutral: yes (no)
Sediment Deposits: yes (no)
Drainage Patterns: yes (no)
Local Soil Survey: yes (no)
Water-stained Leaves yes (no)
Other (explain):

Wetland hydrology present? yes (no)
Rationale for decision/Remarks:
No saturation or moisture - soils are dry. Area drains east toward PEM wetland.

SOILS

Map Unit Name (Series & Phase): Urband Land

Drainage Class: variable

Taxonomy (subgroup): NA

Field observations confirm mapped type? (Yes) No

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-9	A	10YR 3/2	—	—	sandy loam	
9-11	B	2.5Y 5/4			loamy sand	
	sub-dominant matrix	2.5Y 6/4				
11+					repeated refusal	

Hydric Soil Indicators: (check all that apply)

- _____ Histosol
- _____ Histic Epipedon
- _____ Sulfidic Odor
- _____ Aquic Moisture Regime
- _____ Reducing Conditions
- _____ Gleyed or Low-Chroma (=1) matrix
- _____ Matrix chroma ≤ 2 with mottles
- _____ Mg or Fe Concretions
- _____ High Organic Content in Surface Layer of Sandy Soils
- _____ Organic Streaking in Sandy Soils
- _____ Listed on National/Local Hydric Soils List
- _____ Other (explain in remarks)

Hydric soils present? yes (no)

Rationale for decision/Remarks:
No indicators present. Soils have high chroma.

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no		
Hydric soils present?	yes	(no)	Is the sampling point within a wetland?	yes (no)
Wetland hydrology present?	yes	(no)		

Rationale/Remarks:
Not all three criteria are met. Vegetation is dominated by PHAR. but area is dry and likely remains dry - draining to the east into WL 0.25M,

NOTES:

DP-A is located ~~on~~ west of 0.25M and west of a concrete culvert that receives from surrounding upbanks and WL 0.25M.

Revised 4/97

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: I-405 South Renton Nicker
Date: 2/2/05
Applicant/owner: WSDOT
County: King
State: WA
Investigator(s): AM, IL
S/T/R: 23/23N/4E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID: YC
Transect ID:
Plot ID: DP-B WL 0.25m

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Phalaris arundinacea	H	100	FACW				
Alnus rubra	T	30	FAC				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation ____
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations ____
Wetland plant database ____
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
All dominants are FAC or wetter

HYDROLOGY

Is it the growing season? yes (no)

Based on: ____ soil temp (record temp ____)
DATE other (explain)

Dept. of inundation: ~ inches
Depth to free water in pit: 9 inches
Depth to saturated soil: 0 inches

Water Marks: yes (no) on ____
Sediment Deposits: yes (no)
Drift Lines: yes (no)
Drainage Patterns: (yes) no
Oxidized Root (live roots) Channels <12 in. yes (no)
Local Soil Survey: yes (no)
FAC Neutral: (yes) no
Water-stained Leaves yes (no)

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? (yes) no
Rationale for decision/Remarks:
Soils are saturated to surface and area is likely saturated or inundated during the early portion of the growing season

SOILS

Map Unit Name (Series & Phase): Urban Land

Drainage Class: variable

Taxonomy (subgroup): NA

Field observations confirm mapped type? (Yes) No

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-4	A1	10YR 3/1	-	-	Sandy loam	
4-8	A2	10YR 2/1	10YR 4/4	few fine distinct	Sandy loam	
8-13	B	2.5Y 3/1	10YR 4/4	common med distinct	Sandy loam	
13+					repeated refusal - compact	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- X Gleyed or Low-Chroma (=1) matrix
- X Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:
Soils contain low chroma and mottles in root zone.

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no		
Hydric soils present?	(yes)	no	Is the sampling point within a wetland?	(yes) no
Wetland hydrology present?	(yes)	no		

Rationale/Remarks:
All three criteria are met.

NOTES: DP-B TS located in WL 0.25 M. It TS a narrow broad swale PEM wetland between NB 405 and the HOV on ramp to I-5 NB. Vegetation TS mowed & maintained. Wetland swale slopes west, discharging into an 18" concrete culvert.

Revised 4/97

DRAFT WETLAND RATING FORM – WESTERN WASHINGTON

Name of wetland (if known): Wetland 0.25M

Location: SEC: 23 TWNSHP: 23N RNGE: 4E (attach map with outline of wetland to rating form)

Person(s) Rating Wetland: A. Merrill Affiliation: WSDOT 405 Project, C, Renton Date of site visit: 2/2/05

DRAFT SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___ IV X

Category I = Score >70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	2
Score for Hydrologic Functions	2
Score for Habitat Functions	5
TOTAL score for functions	9

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply X

Final Category (choose the "highest" category from above) IV

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X		

Does the wetland being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
SP1. *Has the wetland been documented as a habitat for any Federally listed Threatened or Endangered plant or animal species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland been documented as habitat for any State listed Threatened or Endangered plant or animal species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database.		X
SP3. *Does the wetland contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

Wetland Name: _____ **Date:** _____

1. Are the water levels in the wetland usually controlled by tides (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe** NO – **Saltwater Tidal Fringe (Estuarine)**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. Is the topography within the wetland flat and precipitation is only source (>90%) of water to it.
NO – go to 3 **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the wetland **meet both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) where at least 20 acres (8 ha) are permanently inundated (ponded or flooded);
___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the wetland **meet all** of the following criteria?
____The wetland is on a slope (*slope can be very gradual*),
____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
____The water leaves the wetland **without being impounded**?
NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks(depressions are usually <3ft diameter and less than 1 foot deep).*
NO - go to 5 **YES** – The wetland class is **Slope**

5. Is the wetland in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river? The flooding should occur at least once every two years, on the average, to answer "yes." *The wetland can contain depressions that are filled with water when the river is not flooding.*
NO - go to 6 **YES** – The wetland class is **Riverine**

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

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

7. Is the wetland located in a very flat area with no obvious depression and no stream or river running through it and providing water. The wetland seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

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

8. Your wetland seems to be difficult to classify. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. Sometimes we find characteristics of several different hydrogeomorphic classes within one wetland boundary. Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland being rated. If the area of the second class is less than 10% classify the wetland using the first class.

HGM Classes Within a Delineated Wetland Boundary	*Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

D	**Depressional and Flats Wetlands**	**Points**
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
D	**D 1. Does the wetland have the potential to improve water quality?** *(see p. 38)*	
D	D 1.1 Characteristics of surface water flows out of the wetland: Wetland is a depression with no surface water outlet — points = 3 Wetland has an intermittently flowing, or highly constricted, outlet — points = 2 Wetland has an unconstricted surface outlet — points = 1 Wetland is flat and has no obvious outlet and/or outlet is a ditch — points = 1	1
D	D 1.2 The soil 2 inches below the surface is clay, organic, or smells anoxic (hydrogen sulfide or rotten eggs). YES — points = 4 NO — points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest class): Wetland has persistent, ungrazed, vegetation > = 95% of area — points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area — points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area — points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area — points = 0	0
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland — points = 4 Area seasonally ponded is > ¼ total area of wetland — points = 2 Area seasonally ponded is < ¼ total area of wetland — points = 0 NOTE: *See text for indicators of seasonal and permanent inundation..*	0
D	**Total for D 1** *Add the points in the boxes above*	1
D	**D 2. Does the wetland have the opportunity to improve water quality?** *(see p. 44)* Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants.* Y — Grazing in the wetland or within 150 ft Y — Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other _____ **YES** multiplier is 2 **NO** multiplier is **1**	multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 *Add score to table on p. 1*	2

D	Depressional and Flats Wetlands	Points
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation	
	D 3. Does the wetland have the <u>potential</u> to reduce flooding and erosion? *(see p. 46)*	
D	D 3.1 Characteristics of surface water flows out of the wetland Wetland has no surface water outlet points = 4 Wetland has an intermittently flowing, or highly constricted, outlet points = 2 Wetland is flat and has no obvious outlet and/or outlet is a small ditch points = 1 Wetland has an unconstricted surface outlet (points = 0)	0
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet* Marks of ponding are 3 ft or more above the surface points = 7 The wetland is a "headwater" wetland" points = 5 Marks of ponding between 2 ft to < 3 ft from surface points = 5 Marks are at least 0.5 ft to < 2 ft from surface points = 3 Wetland is flat but has small depressions on the surface that trap water (points = 1) Marks of ponding less than 0.5 ft points = 0	1
D	D 3.3 Contribution of wetland to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland itself.* The area of the basin is less than 10 times the area of wetland points = 5 The area of the basin is 10 to 100 times the area of the wetland points = 3 The area of the basin is more than 100 times the area of the wetland (points = 0) Wetland is in the FLATS class (basin = the wetland, by definition) points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	1
D	**D 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** *(see p. 49)* Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems ✓ Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems Other _____ (YES) multiplier is 2 NO multiplier is 1	multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	2

These questions apply to wetlands of all HGM classes. Points

HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat

H 1. Does the wetland have the potential to provide habitat for many species?

H 1.1 Vegetation structure *(see p. 72)*

Check the types of vegetation classes present (as defined by Cowardin) if the class covers more than 10% of the area of the wetland or ¼ acre.

____Aquatic bed
__X__Emergent plants
____Scrub/shrub (areas where shrubs have >30% cover)
____Forested (areas where trees have >30% cover)
____Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover)

Add the number of vegetation types that qualify. If you have:

4 types or more	points = 4
3 types	points = 2
2 types	points = 1
1 type	points = 0

Points: 0

H 1.2. Hydroperiods *(see p. 73)*

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

____Permanently flooded or inundated	4 or more types present	points = 3
__X__Seasonally flooded or inundated	3 types present	points = 2
____Occasionally flooded or inundated	2 types present	point = 1
__X__Saturated only		

____Permanently flowing stream or river in, or adjacent to, the wetland
____Seasonally flowing stream in, or adjacent to, the wetland
____***Lake-fringe wetland* = 2 points**
____***Freshwater tidal wetland* = 2 points**

Points: 1

H 1.3. Richness of Plant Species *(see p. 75)*

Count the number of plant species in the wetland that cover at least 10 ft^2. *(different patches of the same species can be combined to meet the size threshold)*

You do not have to name the species.

Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle

If you counted:	> 19 species	points = 2
List species below if you want to:	5 - 19 species	points = 1
	< 5 species	points = 0

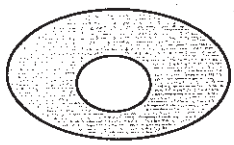
Points: 0

H 1.4. Interspersion of habitats *(see p. 76)*

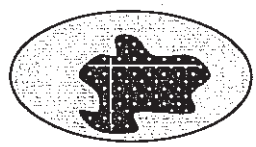
Decided from the diagrams below whether interspersion between types of vegetation (described in H 1.1), or vegetation types and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.

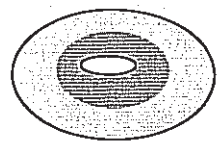


None = 0 points

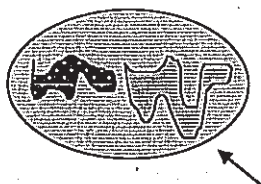


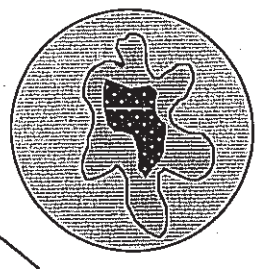
Low = 1 point

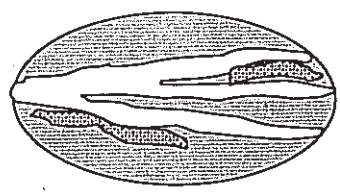




Moderate = 2 points







[riparian braided channels]

High = 3 points

NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".

0

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

____Standing snags (diameter at the bottom > 4 inches) in the wetland

____Undercut banks are present for at least 6.6 ft (2m) and/or overbanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m)

____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present

____At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)*

____Invasive plants cover less than 25% of the wetland area in each stratum of plants

0

H 1. TOTAL Score - potential for providing habitat
Add the scores in the column above

1

Comments

H 2. Does the wetland have the opportunity to provide habitat for many species?

H 2.1 Buffers *(see p. 80)*

Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. **(relatively undisturbed also means no-grazing)** **Points = 5**

— 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4**

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3**

If buffer does not meet any of the three criteria above

— No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— Heavy grazing in buffer. **Points = 1**

— Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.**

— Buffer does not meet any of the criteria above. **Points = 1**

2

H 2.2 Corridors and Connections *(see p. 81)*

H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*).

YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2

H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above?

YES = **2 points** (*go to H 2.3*) NO = H 2.2.3

0

H 2.2.3 Is the wetland:

within 5 mi (8km) of a brackish or salt water estuary OR
within 3 mi of a large field or pasture (>40 acres) OR
within 1 mi of a lake greater than 20 acres?

YES = **1 point** NO = **0 points**

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)*

Which of the following priority habitats are within 330ft (100m) of the wetland?
(see text for a more detailed description of these priority habitats)

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

____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

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

____**Old-growth forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age.

____**Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____**Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.

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

____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages

____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____**Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____**Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5% during the period of average annual low flow. Includes both estuaries and lagoons.

____**Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** No habitats = 0 points

0

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores in the column above*	4
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	5

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT 405 Project S. Renton
Applicant/owner: WSDOT
Investigator(s): AM, DL

Date: 2/2/05
County: King
State: WA
S/T/R: 23/23N/4E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID: Upland
Transect ID:
Plot ID: DP 03P-A

VEGETATION (For strata, indicate T = tree; S = shrub; H = berb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Rubus discolor	S	75	FACU				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 0

Cbeck all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation ____
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations ____
Wetland plant database ____
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? yes (no)
Rationale for decision/Remarks:
Dominant plant is FACU

HYDROLOGY

Is it the growing season? yes (no)

Based on: ____ soil temp (record temp ____)
time of year other (explain)

Dept. of inundation: ____ inches

Depth to free water in pit: ____ inches
Depth to saturated soil: ____ inches

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Water Marks: yes (no) on ____
Drift Lines: yes (no)
Oxidized Root (live roots) Channels <12 in. yes (no)
FAC Neutral: yes no

Sediment Deposits: yes (no)
Drainage Patterns: yes (no)
Local Soil Survey: yes (no)
Water-stained Leaves yes (no)

Other (explain):

Wetland hydrology present? yes (no)
Rationale for decision/Remarks:
No indication of wetland hydrology

SOILS

Map Unit Name (Series & Phase) Urban land

Drainage Class Variable

Taxonomy (subgroup) NA

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-9	A	10YR 2/2			loamy sand	
9-16	B	2.5Y 3/2			sand	

Hydric Soil Indicators: (check all that apply)

_____ Histosol
_____ Histic Epipedon
_____ Sulfidic Odor
_____ Aquic Moisture Regime
_____ Reducing Conditions
_____ Gleyed or Low-Chroma (=1) matrix
_____ Matrix chroma ≤ 2 with mottles
_____ Mg or Fe Concretions
_____ High Organic Content in Surface Layer of Sandy Soils
_____ Organic Streaking in Sandy Soils
_____ Listed on National/Local Hydric Soils List
_____ Other (explain in remarks)

Hydric soils present? yes (no)

Rationale for decision/Remarks:

No hydric features present.

Wetland Determination (circle)

Hydrophytic vegetation present?	yes	(no)			
Hydric soils present?	yes	(no)	Is the sampling point	yes	(no)
Wetland hydrology present?	yes	(no)	within a wetland?		

Rationale/Remarks:

No wetland criteria met.

NOTES:

Plot A is located outside of wetland 0.3L, next to stream, and south of I-5 & 405 ramp.

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT 405 Project S. Renton
Applicant/owner: WSDOT
Investigator(s): JL, AM

Date: 1/20/05
County: King
State: WA
S/T/R: 23/23N/4E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID:
Transect ID:
Plot ID: DP 0.3R-B

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Rubus discolor	S	30	FACU				
Thuja plicata	T	20	FAC				
Alnus rubra	T	60	FAC				
Salix lucida	S	10	FACW				
Pseudotsuga menziesii	T	5	FACU				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 67

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation ____
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations ____
Wetland plant database ____
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
>50% of dominant plants are FAC or wetter.

HYDROLOGY

Is it the growing season? yes (no)

Based on: ____ soil temp (record temp ____)
time of year other (explain)

Dept. of inundation: ____ inches

Depth to free water in pit: ____ inches
Depth to saturated soil: surface inches

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Water Marks: (yes) no on ____	Sediment Deposits: yes (no)
Drift Lines: yes (no)	Drainage Patterns: (yes) no
Oxidized Root (live roots) Channels <12 in. yes (no)	Local Soil Survey: yes (no)
FAC Neutral: yes no	Water-stained Leaves (yes) no

Other (explain):

Wetland hydrology present? (yes) no
Rationale for decision/Remarks:
Soils are saturated. Standing water present elsewhere in wetland.

SOILS

Map Unit Name (Series & Phase) Urban land

Drainage Class Variable

Taxonomy (subgroup) NA

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-10	A	10YR 4/2			Sandy loam	
10-16+	B	5Y 5/2	10YR 4/4	common coarse distinct	loam	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma (=1) matrix
- X Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:

Low chroma matrix w/ mottles present in B horizon

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no		
Hydric soils present?	(yes)	no	Is the sampling point within a wetland?	(yes) no
Wetland hydrology present?	(yes)	no		

Rationale/Remarks:

All 3 wetland criteria met.

NOTES:

DP-B is located on a slope in wetland 03R. Wetland is a depression-area, associated with a fish-bearing stream. Wetland is adjacent to I-405-NB lanes, and southcenter way. Plot is in PEO section of wetland.

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: I-405 South Renton	Date: 1/20/05
Applicant/owner: WSDOT	County: KING
Investigator(s): IL, AM	State: WA
	S/T/R: 23/23N/4E
Do Normal Circumstances exist on the site? yes no	Community ID: X
Is the site significantly disturbed (atypical situation)? yes no	Transect ID:
Is the area a potential Problem Area? yes no	Plot ID: DP 03RDP-C
Explanation of atypical or problem area:	

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Phalaris arundinacea	H	100	FACW				
Acer circinatum	S	5					

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100%

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	✓	Physiological/reproductive adaptations	
Morphological adaptations		Wetland plant database	
Technical Literature		Personal knowledge of regional plant communities	x
		Other (explain)	

Hydrophytic vegetation present? yes no
Rationale for decision/Remarks:
Area dominated by hydrophytic species (FACW)

HYDROLOGY

Is it the growing season? yes no	Water Marks: yes no on ____	Sediment Deposits: yes no
Based on: ____ soil temp (record temp ____) DATE other (explain)	Drift Lines: yes no	Drainage Patterns: yes no
Dept. of inundation: — inches	Oxidized Root (live roots) Channels <12 in. yes no	Local Soil Survey: yes no
Depth to free water in pit: 12 inches Depth to saturated soil: 0 inches	FAC Neutral: yes no	Water-stained Leaves yes no
Check all that apply & explain below: Stream, Lake or gage data: ____ Aerial photographs: ____ Other: ____	Other (explain):	

Wetland hydrology present? yes no (Inferred)
Rationale for decision/Remarks:
Standing H_2O present in wetland area that is likely also present (or saturation within 12") in early portion of the growing season. Heavy rain two days prior to delineation.

SOILS

Map Unit Name (Series & Phase): Urban land

Drainage Class: Variable

Taxonomy (subgroup): NA

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-6	A	10yR 3/2			silty clay loam	
6-16+	B	2.5Y 3/1	10yR 4/4	few fine distinct	clay loam	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- X Gleyed or Low-Chroma (=1) matrix
- X Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:
Soils are clay and contain hydric indicators.

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no		
Hydric soils present?	(yes)	no	Is the sampling point within a wetland?	(yes) no
Wetland hydrology present?	(yes)	no		

Rationale/Remarks:
All three criteria are met.

NOTES: DP-C is located in PEM portion of WL 0.3R this area is ~~west~~ west of main bowl depression PFO wetland - is broad area completely dominated by PHAR. Appears regularly mowed by WSDOT. ~~Partly~~ PHAR area borders RUDI dominated channel of Gilliam Creek.

Revised 4/97

DRAFT WETLAND RATING FORM – WESTERN WASHINGTON

Name of wetland (if known): WSDOT 405 Project Wetland 03R

Location: SEC: 03 TWNSHP: 23N RNGE: 4E (attach map with outline of wetland to rating form)

Person(s) Rating Wetland: A. Merrill Affiliation: S. Renton WSDOT 405 Project Date of site visit: 2/2/05

DRAFT SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III X IV___

Category I = Score >70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	16
Score for Hydrologic Functions	12
Score for Habitat Functions	17
TOTAL score for functions	45

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ **Does not Apply** X

Final Category (choose the "highest" category from above) III

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X		

Does the wetland being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
SP1. *Has the wetland been documented as a habitat for any Federally listed Threatened or Endangered plant or animal species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland been documented as habitat for any State listed Threatened or Endangered plant or animal species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database.		
SP3. *Does the wetland contain individuals of Priority species listed by the WDFW for the state?*		
SP4. *Does the wetland have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

Wetland Name: _____ **Date:** _____

1. Are the water levels in the wetland usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. Is the topography within the wetland flat and precipitation is only source (>90%) of water to it.
   NO – go to 3 **YES** – The wetland class is **Flats**

   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the wetland **meet both** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) where at least 20 acres (8 ha) are permanently inundated (ponded or flooded);
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the wetland **meet all** of the following criteria?
   ____The wetland is on a slope (*slope can be very gradual*),
   ____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ____The water leaves the wetland **without being impounded?**
   NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks(depressions are usually <3ft diameter and less than 1 foot deep).*
   NO - go to 5 **YES** – The wetland class is **Slope**

5. Is the wetland in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river? The flooding should occur at least once every two years, on the average, to answer "yes." *The wetland can contain depressions that are filled with water when the river is not flooding.*
   NO - go to 6 **YES** – The wetland class is **Riverine**

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

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

7. Is the wetland located in a very flat area with no obvious depression and no stream or river running through it and providing water. The wetland seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

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

8. Your wetland seems to be difficult to classify. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. Sometimes we find characteristics of several different hydrogeomorphic classes within one wetland boundary. Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland being rated. If the area of the second class is less than 10% classify the wetland using the first class.

HGM Classes Within a Delineated Wetland Boundary	*Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

D	Depressional and Flats Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
D	**D 1. Does the wetland have the potential to improve water quality?** *(see p. 38)*	
D	D 1.1 Characteristics of surface water flows out of the wetland: Wetland is a depression with no surface water outlet — points = 3 Wetland has an intermittently flowing, or highly constricted, outlet — points = 2 Wetland has an unconstricted surface outlet — points = 1 Wetland is flat and has no obvious outlet and/or outlet is a ditch — points = 1	1
D	D 1.2 The soil 2 inches below the surface is clay, organic, or smells anoxic (hydrogen sulfide or rotten eggs). YES — points = 4 NO — points = 0	4
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest class): Wetland has persistent, ungrazed, vegetation >= 95% of area — points = 5 Wetland has persistent, ungrazed, vegetation >= 1/2 of area — points = 3 Wetland has persistent, ungrazed vegetation >= 1/10 of area — points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area — points = 0	3
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland — points = 4 Area seasonally ponded is > ¼ total area of wetland — points = 2 Area seasonally ponded is < ¼ total area of wetland — points = 0 NOTE: *See text for indicators of seasonal and permanent inundation..*	0
D	**Total for D 1** *Add the points in the boxes above*	8
D	**D 2. Does the wetland have the opportunity to improve water quality?** *(see p. 44)* Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants.* — Grazing in the wetland or within 150 ft √ Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other _____ (YES) multiplier is 2 NO multiplier is 1	multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	16

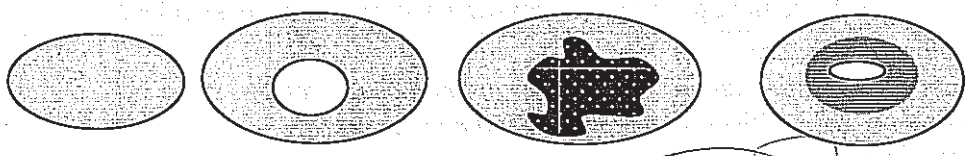
D	Depressional and Flats Wetlands	Points
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation	
	D 3. Does the wetland have the <u>potential</u> to reduce flooding and erosion? *(see p. 46)*	
D	D 3.1 Characteristics of surface water flows out of the wetland Wetland has no surface water outlet — points = 4 Wetland has an intermittently flowing, or highly constricted, outlet — points = 2 Wetland is flat and has no obvious outlet and/or outlet is a small ditch — points = 1 Wetland has an unconstricted surface outlet — points = 0	0
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet* Marks of ponding are 3 ft or more above the surface — points = 7 The wetland is a "headwater" wetland" — points = 5 Marks of ponding between 2 ft to < 3 ft from surface — points = 5 Marks are at least 0.5 ft to < 2 ft from surface — points = 3 Wetland is flat but has small depressions on the surface that trap water — points = 1 Marks of ponding less than 0.5 ft — points = 0	3
D	D 3.3 Contribution of wetland to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland itself.* The area of the basin is less than 10 times the area of wetland — points = 5 The area of the basin is 10 to 100 times the area of the wetland — points = 3 The area of the basin is more than 100 times the area of the wetland — points = 0 Wetland is in the FLATS class (basin = the wetland, by definition) — points = 5	3
D	**Total for D 3** *Add the points in the boxes above*	6
D	**D 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** *(see p. 49)* Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other _____ **YES** multiplier is 2 **NO** multiplier is 1	multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 *Add score to table on p. 1*	12

estimate

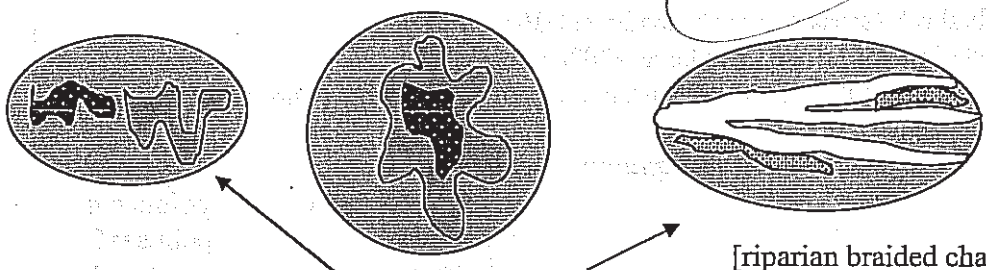
These questions apply to wetlands of all HGM classes.	Points
HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat	
H 1. Does the wetland have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin) if the class covers more than 10% of the area of the wetland or ¼ acre.* ___ Aquatic bed __X__ Emergent plants __X__ Scrub/shrub (areas where shrubs have >30% cover) __X__ Forested (areas where trees have >30% cover) __X__ Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) *Add the number of vegetation types that qualify. If you have:* 4 types or more points = 4 3 types points = 2 2 types points = 1 1 type points = 0	4
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ___ Permanently flooded or inundated — 4 or more types present — points = 3 __X__ Seasonally flooded or inundated — 3 types present — points = 2 __X__ Occasionally flooded or inundated — 2 types present — point = 1 __X__ Saturated only __X__ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points**	3
H 1.3. Richness of Plant Species *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* If you counted: > 19 species points = 2 *List species below if you want to:* 5 - 19 species points = 1 < 5 species points = 0	1

H 1.4. Interspersion of habitats *(see p. 76)*

Decided from the diagrams below whether interspersion between types of vegetation (described in H 1.1), or vegetation types and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



None = 0 points Low = 1 point Moderate = 2 points



[riparian braided channels]

High = 3 points

NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".

2

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

X Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

√ Standing snags (diameter at the bottom > 4 inches) in the wetland

___ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m)

___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present

___ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)*

___ Invasive plants cover less than 25% of the wetland area in each stratum of plants

2

H 1. TOTAL Score - potential for providing habitat
Add the scores in the column above

12

Comments

H 2. Does the wetland have the opportunity to provide habitat for many species?

H 2.1 Buffers *(see p. 80)*

Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. **(relatively undisturbed also means no-grazing)** **Points = 5**

— 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4**

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3**

If buffer does not meet any of the three criteria above

— No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— Heavy grazing in buffer. **Points = 1**

— Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.**

— Buffer does not meet any of the criteria above. **Points = 1**

1

H 2.2 Corridors and Connections *(see p. 81)*

H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*).

YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2

H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above?

YES = **2 points** (*go to H 2.3*) NO = H 2.2.3

H 2.2.3 Is the wetland:

within 5 mi (8km) of a brackish or salt water estuary OR
within 3 mi of a large field or pasture (>40 acres) OR
within 1 mi of a lake greater than 20 acres?

YES = **1 point** NO = **0 points**

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)*

Which of the following priority habitats are within 330ft (100m) of the wetland?
(see text for a more detailed description of these priority habitats)

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

____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

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

____ **Old-growth forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age.

____ **Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____ **Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.

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

____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages

____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____ **Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5% during the period of average annual low flow. Includes both estuaries and lagoons.

____ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** No habitats = 0 points

1

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores in the column above*	5
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	17

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT 405 Project S. Renton	Date: 1/11/05
Applicant/owner: WSDOT	County: King
Investigator(s): AM, JC	State: LA
	S/T/R: 23/23N/4E
Do Normal Circumstances exist on the site? yes no	Community ID: upland
Is the site significantly disturbed (atypical situation)? yes no	Transect ID:
Is the area a potential Problem Area? yes no	Plot ID: DP 0.4L-A
Explanation of atypical or problem area:	

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Plantago lanceolata	H	15	FAC				
Hypochaeris radicata	H	30	FACU				
Agrostis sp.	H	40	FAC				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 50

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	___	Physiological/reproductive adaptations	___
Morphological adaptations	___	Wetland plant database	X
Technical Literature	___	Personal knowledge of regional plant communities	___
		Other (explain)	___

Hydrophytic vegetation present? yes no
Rationale for decision/Remarks:
FAC or wetter plants are not dominant

HYDROLOGY

Is it the growing season? yes no	Water Marks: yes no on ___	Sediment Deposits: yes no
Based on: ___ soil temp (record temp ___) time of year other (explain)	Drift Lines: yes no	Drainage Patterns: yes no
Dept. of inundation: — inches	Oxidized Root (live roots) Channels <12 in. yes no	Local Soil Survey: yes no
Depth to free water in pit: — inches Depth to saturated soil: — inches	FAC Neutral: yes no	Water-stained Leaves yes no
Check all that apply & explain below: Stream, Lake or gage data: ___ Aerial photographs: ___ Other: ___	Other (explain):	

Wetland hydrology present? yes no
Rationale for decision/Remarks:
Soils are not saturated.

SOILS

Map Unit Name (Series & Phase) Urban land

Drainage Class variable

Taxonomy (subgroup) N/A

Field observations confirm mapped type? (Yes) No

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-7	A	10YR3/2	10YR4/6	distinct, common, medium	gravelly loamy sand.	
7-9	B	2.5Y6/2	—	—	Sand	
9+	too compact to sample					

Hydric Soil Indicators: (check all that apply)

_____ Histosol
_____ Histic Epipedon
_____ Sulfidic Odor
_____ Aquic Moisture Regime
_____ Reducing Conditions
_____ Gleyed or Low-Chroma (=1) matrix
_____ Matrix chroma ≤ 2 with mottles
_____ Mg or Fe Concretions
_____ High Organic Content in Surface Layer of Sandy Soils
_____ Organic Streaking in Sandy Soils
_____ Listed on National/Local Hydric Soils List
_____ Other (explain in remarks)

Hydric soils present? yes (no)

Rationale for decision/Remarks:

No hydric soil indicators observed below 10", or in B horizon

Wetland Determination (circle)

Hydrophytic vegetation present? yes (no)
Hydric soils present? yes (no)
Wetland hydrology present? yes (no)

Is the sampling point within a wetland? yes (no)

Rationale/Remarks:

No the wetland criteria met.

NOTES:

DP A is located directly upslope & S. of wetland 0.4 L. Plot is adjacent to road shoulder.

Revised 4/97

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT 405 Project, S. Renton
Date: 1/11/05
Applicant/owner: WSDOT
County: Kits
State: WA
Investigator(s): AM, JC
S/T/R: 23/23N/4E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID: wetland
Transect ID:
Plot ID: DP 0.4L-B

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Phalaris arundinacea	H	70	FACW				
Agrostis sp.	H	20	FAC				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	X	Physiological/reproductive adaptations	
Morphological adaptations		Wetland plant database	X
Technical Literature		Personal knowledge of regional plant communities	
		Other (explain)	

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
Both dominant plants are FAC or wetter.

HYDROLOGY

Is it the growing season? yes (no)

Based on: _____ soil temp (record temp _____)
time of year _____ other (explain)

Dept. of inundation: — inches
Depth to free water in pit: 3 inches
Depth to saturated soil: surface inches

Water Marks: yes (no) on _____	Sediment Deposits: yes (no)
Drift Lines: yes (no)	Drainage Patterns: (yes) no
Oxidized Root (live roots) Channels <12 in. yes (no)	Local Soil Survey: yes (no)
FAC Neutral: yes no	Water-stained Leaves (yes) no

Check all that apply & explain below:
Stream, Lake or gage data: _____
Aerial photographs: _____ Other: _____

Other (explain):

Wetland hydrology present? (yes) no
Rationale for decision/Remarks:
Soils saturated in wetland, free water observed at 3" depth.

SOILS

Map Unit Name (Series & Phase) Urban land

Drainage Class variable

Taxonomy (subgroup) n/a

Field observations confirm mapped type? (Yes) No

Profile Description						
Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-4	A	5Y2.5/2			loamy sand.	
4-8	B	5Y6/2	10YR 5/6	distinct, common, medium	sand	
8+	too compact to sample					

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma (=1) matrix
- X Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks: Low chroma matrix w/ mottles observed in B horizon

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no		
Hydric soils present?	(yes)	no	Is the sampling point	(yes) no
Wetland hydrology present?	(yes)	no	within a wetland?	

Rationale/Remarks:

All 3 wetland criteria met.

NOTES:

DP-B is located in wetland 0.4L, a narrow-ditch associated wetland. Wetland is adjacent to 405 S-bound, and a steep slope in the ROW. RHAR & TRIA are dominant in ditch. Wetland is PEM.

DRAFT WETLAND RATING FORM – WESTERN WASHINGTON

Name of wetland (if known): 0.4L

Location: SEC: 23 TWNSHP: 23N RNGE: 4E (attach map with outline of wetland to rating form)

Person(s) Rating Wetland: A. Merrill Affiliation: S. Renton WSDOT 405 Project Date of site visit: 1/11/05

DRAFT SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___ IV X

Category I = Score >70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	4
Score for Hydrologic Functions	2
Score for Habitat Functions	9
TOTAL score for functions	15

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ **Does not Apply** X

Final Category (choose the "highest" category from above) IV

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X		

Does the wetland being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
SP1. *Has the wetland been documented as a habitat for any Federally listed Threatened or Endangered plant or animal species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland been documented as habitat for any State listed Threatened or Endangered plant or animal species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database.		X
SP3. *Does the wetland contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

Wetland Name: _____ **Date:** _____

1. Are the water levels in the wetland usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. Is the topography within the wetland flat and precipitation is only source (>90%) of water to it.
   NO – go to 3 **YES** – The wetland class is **Flats**

   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the wetland **meet both** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) where at least 20 acres (8 ha) are permanently inundated (ponded or flooded);
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the wetland **meet all** of the following criteria?
   ____The wetland is on a slope (*slope can be very gradual*),
   ____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ____The water leaves the wetland **without being impounded?**
   NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks(depressions are usually <3ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Is the wetland in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river? The flooding should occur at least once every two years, on the average, to answer "yes." *The wetland can contain depressions that are filled with water when the river is not flooding.*
   NO - go to 6 **YES** – The wetland class is **Riverine**

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

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

7. Is the wetland located in a very flat area with no obvious depression and no stream or river running through it and providing water. The wetland seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

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

8. Your wetland seems to be difficult to classify. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. Sometimes we find characteristics of several different hydrogeomorphic classes within one wetland boundary. Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland being rated. If the area of the second class is less than 10% classify the wetland using the first class.

HGM Classes Within a Delineated Wetland Boundary	*Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

D	Depressional and Flats Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
D	**D 1. Does the wetland have the potential to improve water quality?** *(see p. 38)*	
D	D 1.1 Characteristics of surface water flows out of the wetland: Wetland is a depression with no surface water outlet — points = 3 Wetland has an intermittently flowing, or highly constricted, outlet — points = 2 Wetland has an unconstricted surface outlet — points = 1 Wetland is flat and has no obvious outlet and/or outlet is a ditch — points = 1	1
D	D 1.2 The soil 2 inches below the surface is clay, organic, or smells anoxic (hydrogen sulfide or rotten eggs). YES — points = 4 NO — points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest class): Wetland has persistent, ungrazed, vegetation >= 95% of area — points = 5 Wetland has persistent, ungrazed, vegetation >= 1/2 of area — points = 3 Wetland has persistent, ungrazed vegetation >= 1/10 of area — points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area — points = 0	1
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland — points = 4 Area seasonally ponded is > ¼ total area of wetland — points = 2 Area seasonally ponded is < ¼ total area of wetland — points = 0 NOTE: *See text for indicators of seasonal and permanent inundation..*	0
D	**Total for D 1** *Add the points in the boxes above*	2
D	**D 2. Does the wetland have the opportunity to improve water quality?** *(see p. 44)* Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants.* — Grazing in the wetland or within 150 ft 1 Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other _____ YES multiplier is 2 NO multiplier is 1	multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 *Add score to table on p. 1*	4

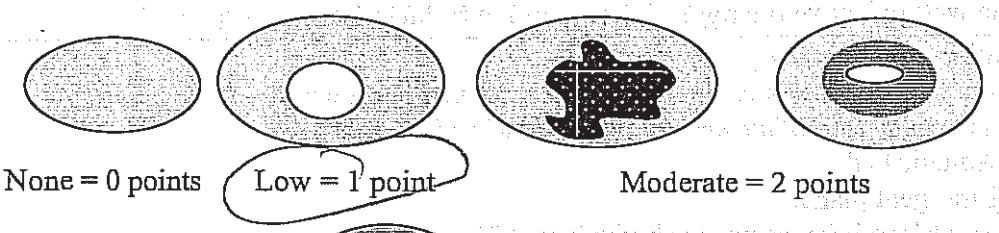
D	Depressional and Flats Wetlands	Points
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation	
	D 3. Does the wetland have the <u>potential</u> to reduce flooding and erosion? *(see p. 46)*	
D	D 3.1 Characteristics of surface water flows out of the wetland Wetland has no surface water outlet points = 4 Wetland has an intermittently flowing, or highly constricted, outlet points = 2 Wetland is flat and has no obvious outlet and/or outlet is a small ditch points = 1 Wetland has an unconstricted surface outlet points = 0	0
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet* Marks of ponding are 3 ft or more above the surface points = 7 The wetland is a "headwater" wetland" points = 5 Marks of ponding between 2 ft to < 3 ft from surface points = 5 Marks are at least 0.5 ft to < 2 ft from surface points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	1
D	D 3.3 Contribution of wetland to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland itself.* The area of the basin is less than 10 times the area of wetland points = 5 The area of the basin is 10 to 100 times the area of the wetland points = 3 The area of the basin is more than 100 times the area of the wetland points = 0 Wetland is in the FLATS class (basin = the wetland, by definition) points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	1
D	**D 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** *(see p. 49)* Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems X Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ YES multiplier is **2** NO multiplier is **1**	multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 *Add score to table on p. 1*	2

estimate

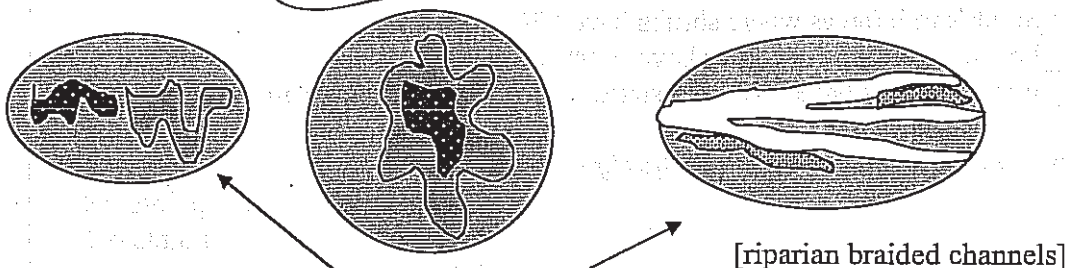
These questions apply to wetlands of all HGM classes.	Points
HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat	
H 1. Does the wetland have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin) if the class covers more than 10% of the area of the wetland or ¼ acre.* ___ Aquatic bed __X__ Emergent plants ___ Scrub/shrub (areas where shrubs have >30% cover) ___ Forested (areas where trees have >30% cover) ___ Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) *Add the number of vegetation types that qualify. If you have:* 4 types or more — points = 4 3 types — points = 2 2 types — points = 1 1 type — points = 0	1
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ___ Permanently flooded or inundated __X__ Seasonally flooded or inundated ___ Occasionally flooded or inundated __X__ Saturated only ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** 4 or more types present — points = 3 3 types present — points = 2 2 types present — point = 1	2
H 1.3. Richness of Plant Species *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* *List species below if you want to:* If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	1

H 1.4. Interspersion of habitats *(see p. 76)*

Decided from the diagrams below whether interspersion between types of vegetation (described in H 1.1), or vegetation types and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



None = 0 points Low = 1 point Moderate = 2 points



High = 3 points [riparian braided channels]

NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".

1

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

____Standing snags (diameter at the bottom > 4 inches) in the wetland

____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m)

____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present

____At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*

____ Invasive plants cover less than 25% of the wetland area in each stratum of plants

0

H 1. TOTAL Score - potential for providing habitat
Add the scores in the column above

5

Comments

H 2. Does the wetland have the opportunity to provide habitat for many species?

H 2.1 Buffers *(see p. 80)*

Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. **(relatively undisturbed also means no-grazing)** **Points = 5**

— 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4**

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3**

If buffer does not meet any of the three criteria above

— No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— Heavy grazing in buffer. **Points = 1**

— Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.**

X — Buffer does not meet any of the criteria above. **Points = 1**

1

H 2.2 Corridors and Connections *(see p. 81)*

H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*).

YES = **4 points** (*go to H 2.3*) (NO) = go to H 2.2.2

H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above?

YES = **2 points** (*go to H 2.3*) (NO) = H 2.2.3

H 2.2.3 Is the wetland:

within 5 mi (8km) of a brackish or salt water estuary OR
within 3 mi of a large field or pasture (>40 acres) OR
within 1 mi of a lake greater than 20 acres?

YES = **1 point** (NO) = **0 points**

0

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)*

Which of the following priority habitats are within 330ft (100m) of the wetland?
(see text for a more detailed description of these priority habitats)

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

____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

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

____**Old-growth forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age.

____**Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____**Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.

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

____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages

____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____**Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____**Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5% during the period of average annual low flow. Includes both estuaries and lagoons.

0

_____**Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** No habitats = 0 points

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores in the column above*	4
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	9

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT I-405 S. Renton Nickel	Date: 1/6/04
Applicant/owner: WSDOT	County: King
Investigator(s): Jeff Collins, Steve Kreuger	State: WA S/T/R: 23/23N/5E
Do Normal Circumstances exist on the site? (yes) no Is the site significantly disturbed (atypical situation)? yes (no) Is the area a potential Problem Area? yes (no) Explanation of atypical or problem area:	Community ID: U Transect ID: Plot ID: DP 0.6L-A

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Agrostis sp.	H	30	FAC	Poa sp	H	50	FAC
Vicia sativa	H	5	UPL	?Tonecetum sp.	H	10	?
Taraxacum officinale	H	5	FACU				
Cirsium arvense	H	2	FAC-				
Phalaris arundinacea	H	10	FACW				
Geranium robertianum	H	5	NI				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	____	Physiological/reproductive adaptations	____
Morphological adaptations	____	Wetland plant database	____
Technical Literature	____	Personal knowledge of regional plant communities	____
		Other (explain)	____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
100% of dominant plant species are FAC, FACW, or OBL

HYDROLOGY

Is it the growing season? yes (no)

Based on: date soil temp (record temp ____) ____ other (explain)

Dept. of inundation: ____ inches	Water Marks: yes (no) on ____	Sediment Deposits: yes (no)
	Drift Lines: yes (no)	Drainage Patterns: yes (no)
Depth to free water in pit: ____ inches Depth to saturated soil: ____ inches	Oxidized Root (live roots) Channels <12 in. yes (no) FAC Neutral: yes no	Local Soil Survey: yes (no) Water-stained Leaves yes (no)

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? yes (no)
Rationale for decision/Remarks:
Soils not saturated and no other indicators of wetland hydrology are present

SOILS

Map Unit Name (Series & Phase) Urban Land

Drainage Class _____

Taxonomy (subgroup) N/A

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-6	A	10YR 3/2	—	—	Sandy loam	
6-12	B	10YR 5/6	7.5YR 5/8	common, distinct medium	Loamy sand	
12-16+	C	10YR 7/3	—	—	loamy	

Hydric Soil Indicators: (check all that apply)

- _____ Histosol
- _____ Histic Epipedon
- _____ Sulfidic Odor
- _____ Aquic Moisture Regime
- _____ Reducing Conditions
- _____ Gleyed or Low-Chroma (=1) matrix
- _____ Matrix chroma ≤ 2 with mottles
- X Mg or Fe Concretions
- _____ High Organic Content in Surface Layer of Sandy Soils
- _____ Organic Streaking in Sandy Soils
- _____ Listed on National/Local Hydric Soils List
- _____ Other (explain in remarks)

Hydric soils present? yes (no)

Rationale for decision/Remarks:

redoximorphic features ~~and~~ present, but soil chroma is too light in color.

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no			
Hydric soils present?	yes	(no)	Is the sampling point within a wetland?	yes	(no)
Wetland hydrology present?	yes	(no)			

Rationale/Remarks:

Does not meet all 3 wetland determination criteria

NOTES: fill soils in upland with redox. features.

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT S. Renton Nickel — Date: 1/6/05

Applicant/owner: WSDOT — County: King

Investigator(s): Jeff Collins, Steve Kreimer — State: WA — S/T/R: 23/23N/5E

Do Normal Circumstances exist on the site? (yes) no — Community ID: VC

Is the site significantly disturbed (atypical situation)? yes (no) — Transect ID:

Is the area a potential Problem Area? yes (no) — Plot ID: DP 0.6 L-B

Explanation of atypical or problem area:

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Phalaris arundinacea	H	80	FACW				
Juncus effusus	H	20	FACW				
Rubus discolor	S	15	FAC				
Salix sitchecis	S	5	FACW				
Alnus rubra	T	2	FAC				
Populus balsamifera	T	20	FAC				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation ____
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations ____
Wetland plant database ____
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? (yes) no

Rationale for decision/Remarks:
100% of dominant plant species are FAC, FACW, or OBL

HYDROLOGY

Is it the growing season? (yes) no

Based on: date soil temp (record temp ____) ____ other (explain)

Dept. of inundation: — inches

Depth to free water in pit: 4 inches

Depth to saturated soil: 0 inches

Water Marks: yes (no) on ____

Drift Lines: yes (no)

Oxidized Root (live roots) Channels <12 in. yes (no)

FAC Neutral: yes no

Sediment Deposits: (yes) no

Drainage Patterns: (yes) no

Local Soil Survey: yes (no)

Water-stained Leaves (yes) no

Check all that apply & explain below:

Stream, Lake or gage data: ____

Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? (yes) no

Rationale for decision/Remarks:
Soils saturated to the surface and free water present at 4 inches

SOILS

Map Unit Name (Series & Phase) Urban Land

Drainage Class _____

Taxonomy (subgroup) n/a

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-10	A	10YR 4/1	10YR 3/6	medium, distinct common	loamy sand	
10-16+	B	Dominant 10YR 4/3	10YR 3/6	medium, distinct common	loamy sand	
		Subdominant with Gley 1 4/5GY				

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- X Gleyed or Low-Chroma (=1) matrix
- X Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:
Soil chroma of 1 with redoximorphic features.

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no			
Hydric soils present?	(yes)	no	Is the sampling point	(yes)	no
Wetland hydrology present?	(yes)	no	within a wetland?		

Rationale/Remarks:
Meets all 3 wetland determination criteria

NOTES: culvert inlets from the ~~north~~ east end. Wetland connects with a stream ~100 feet from the ~~north~~ east end. Water exporting to the south ~100 feet from the east end, via a culvert

Revised 4/97

PSS wetland - east section is dominated by emergents with some shrubs
western section (~75% of wetland) dominated by shrubs (willow, cottonwood saplings)

culvert inlet at west end of wetland, culvert inlet across wetland to the north of

DRAFT WETLAND RATING FORM – WESTERN WASHINGTON

Name of wetland (if known): WL 0.6 L

Location: SEC: 23 TWNSHP: 23N RNGE: 4E (attach map with outline of wetland to rating form)

Person(s) Rating Wetland: Jeff Collins Affiliation: S. Renton Nicke/WSDOT I-405 Date of site visit: 1/6/05

DRAFT SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___ IV X

Category I = Score >70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	16
Score for Hydrologic Functions	2
Score for Habitat Functions	9
TOTAL score for functions	27

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply___

Final Category (choose the "highest" category from above) **IV**

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X		

Does the wetland being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
SP1. *Has the wetland been documented as a habitat for any Federally listed Threatened or Endangered plant or animal species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland been documented as habitat for any State listed Threatened or Endangered plant or animal species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database.		X
SP3. *Does the wetland contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

Wetland Name: 0.6 L **Date:** 1/6/05

1. Are the water levels in the wetland usually controlled by tides (i.e. except during floods)?
   (NO) - go to 2 **YES** – the wetland class is **Tidal Fringe**

   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. Is the topography within the wetland flat and precipitation is only source (>90%) of water to it.
   (NO) – go to 3 **YES** – The wetland class is **Flats**

   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the wetland **meet both** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) where at least 20 acres (8 ha) are permanently inundated (ponded or flooded);
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
   (NO) go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the wetland **meet all** of the following criteria?
   ____The wetland is on a slope (*slope can be very gradual*),
   ____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ____The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks(depressions are usually <3ft diameter and less than 1 foot deep).*
   (NO) go to 5 **YES** – The wetland class is **Slope**

5. Is the wetland in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river? The flooding should occur at least once every two years, on the average, to answer "yes." *The wetland can contain depressions that are filled with water when the river is not flooding.*
   (NO) - go to 6 **YES** – The wetland class is **Riverine**

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

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

7. Is the wetland located in a very flat area with no obvious depression and no stream or river running through it and providing water. The wetland seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

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

8. Your wetland seems to be difficult to classify. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. Sometimes we find characteristics of several different hydrogeomorphic classes within one wetland boundary. Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland being rated. If the area of the second class is less than 10% classify the wetland using the first class.

HGM Classes Within a Delineated Wetland Boundary	*Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

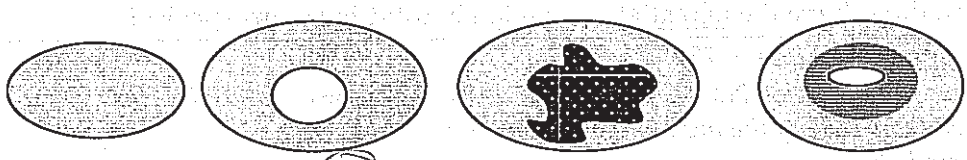
D	Depressional and Flats Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
D	**D 1. Does the wetland have the potential to improve water quality?** *(see p. 38)*	
D	D 1.1 Characteristics of surface water flows out of the wetland: Wetland is a depression with no surface water outlet — points = 3 Wetland has an intermittently flowing, or highly constricted, outlet — points = 2 Wetland has an unconstricted surface outlet — points = (1) Wetland is flat and has no obvious outlet and/or outlet is a ditch — points = 1	1
D	D 1.2 The soil 2 inches below the surface is clay, organic, or smells anoxic (hydrogen sulfide or rotten eggs). YES — points = 4 (NO) — points = (0)	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest class): Wetland has persistent, ungrazed, vegetation >= 95% of area — points = 5 Wetland has persistent, ungrazed, vegetation >= 1/2 of area — points = (3) Wetland has persistent, ungrazed vegetation >= 1/10 of area — points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area — points = 0	3
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland — points = (4) Area seasonally ponded is > ¼ total area of wetland — points = 2 Area seasonally ponded is < ¼ total area of wetland — points = 0 NOTE: *See text for indicators of seasonal and permanent inundation..*	4
D	**Total for D 1** *Add the points in the boxes above*	8
D	**D 2. Does the wetland have the opportunity to improve water quality?** *(see p. 44)* Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants.* X Grazing in the wetland or within 150 ft X Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging X Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ (YES) multiplier is 2 **NO** multiplier is **1**	multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	16

D	Depressional and Flats Wetlands	Points
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream degradation	
	D 3. Does the wetland have the <u>potential</u> to reduce flooding and erosion? *(see p. 46)*	
D	D 3.1 Characteristics of surface water flows out of the wetland Wetland has no surface water outlet points = 4 Wetland has an intermittently flowing, or highly constricted, outlet points = 2 Wetland is flat and has no obvious outlet and/or outlet is a small ditch points = 1 Wetland has an unconstricted surface outlet points = (0)	0
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet* Marks of ponding are 3 ft or more above the surface points = 7 The wetland is a "headwater" wetland" points = 5 Marks of ponding between 2 ft to < 3 ft from surface points = 5 Marks are at least 0.5 ft to < 2 ft from surface points = 3 Wetland is flat but has small depressions on the surface that trap water points = (1) Marks of ponding less than 0.5 ft points = 0	1
D	D 3.3 Contribution of wetland to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland itself.* The area of the basin is less than 10 times the area of wetland points = 5 The area of the basin is 10 to 100 times the area of the wetland points = 3 The area of the basin is more than 100 times the area of the wetland points = (0) Wetland is in the FLATS class (basin = the wetland, by definition) points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	1
D	**D 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** *(see p. 49)* Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems X Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other _____ **YES** multiplier is **2** **NO** multiplier is **1**	multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 *Add score to table on p. 1*	2

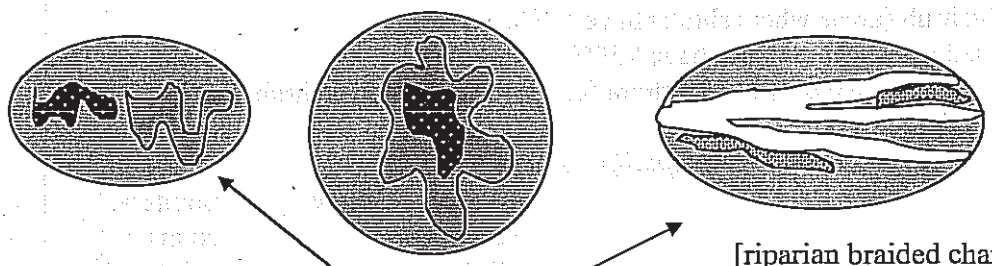
These questions apply to wetlands of all HGM classes.	Points
HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat	
H 1. Does the wetland have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin) if the class covers more than 10% of the area of the wetland or ¼ acre.* ____Aquatic bed __X__Emergent plants __X__Scrub/shrub (areas where shrubs have >30% cover) ____Forested (areas where trees have >30% cover) ____Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) *Add the number of vegetation types that qualify. If you have:* 4 types or more points = 4 3 types points = 2 2 types points = (1) 1 type points = 0	1
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* __X__Permanently flooded or inundated — 4 or more types present — points = 3 __X__Seasonally flooded or inundated — 3 types present — points = (2) ____Occasionally flooded or inundated — 2 types present — point = 1 __X__Saturated only ____Permanently flowing stream or river in, or adjacent to, the wetland ____Seasonally flowing stream in, or adjacent to, the wetland ____***Lake-fringe wetland* = 2 points** ____***Freshwater tidal wetland* = 2 points**	2
H 1.3. Richness of Plant Species *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* If you counted: > 19 species points = 2 *List species below if you want to:* 5 - 19 species points = (1) < 5 species points = 0	1

H 1.4. Interspersion of habitats *(see p. 76)*

Decided from the diagrams below whether interspersion between types of vegetation (described in H 1.1), or vegetation types and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



None = 0 points Low = 1 point Moderate = 2 points



[riparian braided channels]

High = 3 points

NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".

1

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

____Standing snags (diameter at the bottom > 4 inches) in the wetland

____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m)

____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present

____At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*

____ Invasive plants cover less than 25% of the wetland area in each stratum of plants

0

H 1. TOTAL Score - potential for providing habitat
Add the scores in the column above

5

Comments

H 2. Does the wetland have the opportunity to provide habitat for many species?

H 2.1 Buffers *(see p. 80)*

Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. **(relatively undisturbed also means no-grazing)** **Points = 5**

— 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4**

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3**

If buffer does not meet any of the three criteria above

— No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— Heavy grazing in buffer. **Points = 1**

— Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.**

X Buffer does not meet any of the criteria above. **Points = (1)**

H 2.2 Corridors and Connections *(see p. 81)*

H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*).

YES = **4 points** (*go to H 2.3*) (NO) ⇒ go to H 2.2.2

H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above?

YES = **2 points** (*go to H 2.3*) (NO) ⇒ H 2.2.3

H 2.2.3 Is the wetland:

within 5 mi (8km) of a brackish or salt water estuary OR
within 3 mi of a large field or pasture (>40 acres) OR
within 1 mi of a lake greater than 20 acres?

YES = **1 point** (NO) ⇒ **0 points**

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)*

Which of the following priority habitats are within 330ft (100m) of the wetland?
(see text for a more detailed description of these priority habitats)

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

____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

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

____**Old-growth forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age.

____**Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____**Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.

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

____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages

____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____**Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____**Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5% during the period of average annual low flow. Includes both estuaries and lagoons.

____**Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** No habitats = 0 points

0

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores in the column above*	4
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	19

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: I-405 S. RENTON NICKEL - NELSEN
Date: 5/20/05
Applicant/owner: WSDOT
County: KING
State: WA
Investigator(s): IL, DL, AM
S/T/R: 23/23N/4E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID: U
Transect ID:
Plot ID: DP-A WL 0.9

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Holcus lanatus	H	40	FAC				
Rumex crispus	H	20	FAC				
Equisetum arvense	H	10	FAC				
Rubus discolor	S	60	FACU				
Populus balsamifera	T	5	FAC				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 67%

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation ____
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations ____
Wetland plant database ____
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
more than 50% of dominants are FAC or wetter.

HYDROLOGY

Is it the growing season? (yes) no

Based on: ____ soil temp (record temp ____)
DATE other (explain)

Dept. of inundation: — inches

Depth to free water in pit: >16 inches
Depth to saturated soil: >16 inches

Water Marks: yes (no) on ____
Drift Lines: yes (no)
Oxidized Root (live roots) Channels <12 in. yes (no)
FAC Neutral: yes (no) ★
Sediment Deposits: yes (no)
Drainage Patterns: yes (no)
Local Soil Survey: yes (no)
Water-stained Leaves yes (no)

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? yes (no)
Rationale for decision/Remarks:
No indicators present. Area is upland slope which drains to large open water wetland.

SOILS

Map Unit Name (Series & Phase) URBAN

Drainage Class VARIED

Taxonomy (subgroup) —

Field observations confirm mapped type? (Yes) No

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-16	A	2.5Y 4/3	—	—	Sandy loam w/ cobbles	

Hydric Soil Indicators: (check all that apply)

- _____ Histosol
- _____ Histic Epipedon
- _____ Sulfidic Odor
- _____ Aquic Moisture Regime
- _____ Reducing Conditions
- _____ Gleyed or Low-Chroma (=1) matrix
- _____ Matrix chroma ≤ 2 with mottles
- _____ Mg or Fe Concretions
- _____ High Organic Content in Surface Layer of Sandy Soils
- _____ Organic Streaking in Sandy Soils
- _____ Listed on National/Local Hydric Soils List
- _____ Other (explain in remarks)

Hydric soils present? yes (no)

Rationale for decision/Remarks: Soils are sandy & have high chroma.

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no		
Hydric soils present?	yes	(no)	Is the sampling point within a wetland?	yes (no)
Wetland hydrology present?	yes	(no)		

Rationale/Remarks:

Not all three criteria are met.

NOTES: DP-A is located in southwest end of pond on the slope. Slopes are generally covered with Himalayan blackberry and have sandy, dry soils.

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: I-405 S. RENTON NICKEL - NELSEN	Date: 5/20/05
Applicant/owner: WSDOT	County: KING State: WA
Investigator(s): JL, NL, AM	S/T/R: 23/23N/4E
Do Normal Circumstances exist on the site? (yes) no Is the site significantly disturbed (atypical situation)? yes (no) Is the area a potential Problem Area? yes (no) Explanation of atypical or problem area:	Community ID: ✓ Transect ID: Plot ID: DP-B WL 0.9R

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Phalaris arundinacea	H	30	FACW	Holcus lanatus	H	10	FAC
Eleocharis bolanderi	H	60	FACW+				
Salix sitchensis	S	10	FACW				
Salix lucida	S	10	FACW				
Populus balsamifera	saplings T	30	FAC				
Cornus sericea	S	5	FACW				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100%

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	____	Physiological/reproductive adaptations	____
Morphological adaptations	____	Wetland plant database	____
Technical Literature	____	Personal knowledge of regional plant communities	____
		Other (explain)	____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
More than 60% are OBL, FACW, FAC

HYDROLOGY

Is it the growing season? (yes) no

Based on: ____ soil temp (record temp ____)
DATA other (explain)

Dept. of inundation:	- inches	Water Marks: yes (no) on ____	Sediment Deposits: yes (no)
		Drift Lines: yes (no)	Drainage Patterns: (yes) no
Depth to free water in pit:	8 inches	Oxidized Root (live roots) Channels <12 in. yes (no)	Local Soil Survey: yes (no)
Depth to saturated soil:	0 inches	FAC Neutral: yes no	Water-stained Leaves yes (no)

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? (yes) no
Rationale for decision/Remarks:
Soils saturated to surface & free water present @ 8".
Soil pit located near current water level of pond
upslope of

SOILS

Map Unit Name (Series & Phase) URBAN

Drainage Class VARIED

Taxonomy (subgroup) —

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-2	A1	10YR 2/1	—	—	Sandy loam	
2-10	A2	2.5Y 3/2	10YR 4/4	indistinct few	sandy loam	
10-16+	B	2.5Y 4/4	10YR 4/2	common medium distinct	Sandy loam w/ cobbles & sand	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma (=1) matrix
- X Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:
Soil contains low chroma and mottles.

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no			
Hydric soils present?	(yes)	no	Is the sampling point	(yes)	no
Wetland hydrology present?	(yes)	no	within a wetland?		

Rationale/Remarks:
All three criteria are met.

NOTES: DP-B is located @ south west end of the POW, next to, just upslope of current water level. Majority of wetland 0.9R is POW. A narrow strip of PSS rings the POW and is dominated by S. alix sitchensis and S. lucida. The slope is steep adjacent to wetland.

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: Nelsen Property
Applicant/owner: WSDOT 405 Project - S. Renton 22116.07
Investigator(s): AM, IL, OL

Date: 5/20/05
County: King
State: WA
S/T/R: 23/23N/4E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID: upland
Transect ID:
Plot ID: DP-C

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Plantago lanceolata	H	20	FAC				
Lotus corniculatus	H	25	FAC				
Taraxacum officinale	H	5	FACU				
Trifolium repens	H	5	FAC				
Agrostis sp.	H	45	FAC				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation ____
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations ____
Wetland plant database Y
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
All dominant plants are FAC

HYDROLOGY

Is it the growing season? (yes) no

Based on: ____ soil temp (record temp ____)
time of year ____ other (explain)

Dept. of inundation: — inches
Depth to free water in pit: — inches
Depth to saturated soil: 0-2 inches

Water Marks: yes (no) on ____
Drift Lines: yes (no)
Oxidized Root (live roots) Channels <12 in. yes (no)
FAC Neutral: yes (no)
Sediment Deposits: yes (no)
Drainage Patterns: yes (no)
Local Soil Survey: yes (no)
Water-stained Leaves yes (no)

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? yes (no)
Rationale for decision/Remarks:
Soil saturated from 0-2 inches, and moist below. Soil saturation in upper horizon likely due to recent rainfall.

SOILS

Map Unit Name (Series & Phase) URBAN LAND

Drainage Class VARIED

Taxonomy (subgroup) —

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-4	A	2.5Y 3/1	—	—	Sandy loam	
4-11	B	10YR 3/2	7.5YR 4/4	fine, few, distinct	loamy sand w/ cobbles	
11+	too compact to sample					

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma (=1) matrix
- X Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:

Matrix chroma of 2 with mottles observed.

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no		
Hydric soils present?	(yes)	no	Is the sampling point within a wetland?	yes (no)
Wetland hydrology present?	yes	(no)		

Rationale/Remarks:

Wetland hydrology criteria not met.

NOTES:

DP-C is located in meadow area N of pond (wetland 0.8R). Area appears to contain fill/compact soil. Some trees present in meadow, species are: chestnut, hawthorn, & cottonwood.

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: Nelsen Property
Date: 5/20/05
Applicant/owner: WSDOT 405 Project - S. Renton
County: King
Investigator(s): AM, IL, DL
State: WA
S/T/R: 23/23N/4E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID: wetland
Transect ID:
Plot ID: OP-D

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Salix lucida	S	30	FACW				
Populus balsamifera	T	70	FAC				
Rubus discolor	S	40	FACU				
Solanum dulcamara	H	3	FACT				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation ____
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations ____
Wetland plant database X
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
All dominant plants are FAC or wetter

HYDROLOGY

Is it the growing season? (yes) no
Based on: ____ soil temp (record temp ____) time of year other (explain)

Dept. of inundation: ____ inches
Depth to free water in pit: 2 inches
Depth to saturated soil: Surface inches

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Water Marks: (yes) no on ____
Drift Lines: yes (no)
Oxidized Root (live roots) Channels <12 in. (yes) no
FAC Neutral: yes (no)
Sediment Deposits: yes (no)
Drainage Patterns: yes (no)
Local Soil Survey: yes (no)
Water-stained Leaves (yes) no
Other (explain):

Wetland hydrology present? (yes) no
Rationale for decision/Remarks:
Free water present within 2" of the soil surface. Plot is adjacent to permanently ponded area.

SOILS

Map Unit Name URBAN LAND
(Series & Phase)

Drainage Class VARIED

Field observations confirm mapped type? Yes (No)

Taxonomy (subgroup) —

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-5	A	10YR 2/1	—	—	Sandy loam	
5-16+	B	2.5Y 3/2	10YR 4/4	few, faint, fine	sandy loam	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- X Gleyed or Low-Chroma (=1) matrix
- X Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:

Low chroma matrix & mottles observed

Wetland Determination (circle)

Hydrophytic vegetation present? (yes) no
Hydric soils present? (yes) no
Wetland hydrology present? (yes) no

Is the sampling point within a wetland? (yes) no

Rationale/Remarks:

All 3 wetland criteria met.

NOTES: Located in east end of POW Wetland 0.9R

~~in flat grass-dominated~~

Revised 4/97

WETLAND RATING FORM – WESTERN WASHINGTON

Name of wetland (if known): 0.9 R (Nelsen)

Location: SEC: 23 TWNSHP: 23N RNGE: 4E (attach map with outline of wetland to rating form)

Person(s) Rating Wetland: Ilsa Logan, Adam Merrill, Derek Lozano Affiliation: [405 S. Renton Village Pl.] Date of site visit: 5/20/05

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III X IV___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	12
Score for Hydrologic Functions	24
Score for Habitat Functions	19
TOTAL score for functions	45

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply X

Final Category (choose the "highest" category from above) III

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X		

Does the wetland being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
SP1. *Has the wetland been documented as a habitat for any Federally listed Threatened or Endangered plant or animal species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland been documented as habitat for any State listed Threatened or Endangered plant or animal species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database.		✓
SP3. *Does the wetland contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		✓

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

Wetland Name: 0.9R **Date:** 5/20/05

1. Are the water levels in the wetland usually controlled by tides (i.e. except during floods)?
(NO) – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. Is the topography within the wetland flat and precipitation is only source (>90%) of water to it.
(NO) – go to 3 **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the wetland **meet both** of the following criteria?

___The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) where at least 20 acres (8 ha) are permanently inundated (ponded or flooded);

___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
(NO) – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the wetland **meet all** of the following criteria?

___The wetland is on a slope (*slope can be very gradual*),

___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

___The water leaves the wetland **without being impounded?**

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

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

5. Is the wetland in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river? The flooding should occur at least once every two years, on the average, to answer "yes." *The wetland can contain depressions that are filled with water when the river is not flooding.*
(NO) – go to 6 **YES** – The wetland class is **Riverine**

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

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

7. Is the wetland located in a very flat area with no obvious depression and no stream or river running through it and providing water. The wetland seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

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

8. Your wetland seems to be difficult to classify. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. Sometimes we find characteristics of several different hydrogeomorphic classes within one wetland boundary. Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland being rated. If the area of the second class is less than 10% classify the wetland using the first class.

HGM Classes Within a Delineated Wetland Boundary	*Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

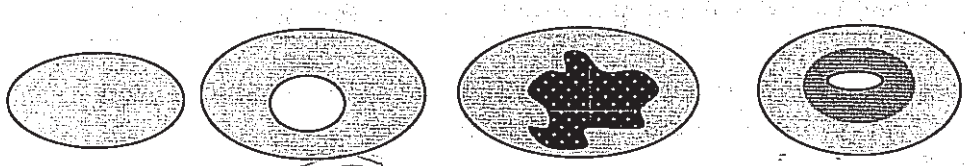
D	Depressional and Flats Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
D	**D 1. Does the wetland have the potential to improve water quality?** *(see p. 38)*	
D	D 1.1 Characteristics of surface water flows out of the wetland: Wetland is a depression with no surface water outlet — points = 3 (circled) Wetland has an intermittently flowing, or highly constricted, outlet — points = 2 Wetland has an unconstricted surface outlet — points = 1 Wetland is flat and has no obvious outlet and/or outlet is a ditch — points = 1	3
D	D 1.2 The soil 2 inches below the surface is clay, organic, or smells anoxic (hydrogen sulfide or rotten eggs). YES — points = 4 NO (circled) — points = 0 (circled)	Ø
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest class): Wetland has persistent, ungrazed, vegetation > = 95% of area — points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area — points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area — points = 1 (circled) Wetland has persistent, ungrazed vegetation <1/10 of area — points = 0	1
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded.* *Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland — points = 4 Area seasonally ponded is > ¼ total area of wetland — points = 2 (circled) Area seasonally ponded is < ¼ total area of wetland — points = 0 NOTE: *See text for indicators of seasonal and permanent inundation..*	2
D	**Total for D 1** *Add the points in the boxes above*	6
D	**D 2. Does the wetland have the opportunity to improve water quality?** *(see p. 44)* Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants.* — Grazing in the wetland or within 150 ft X Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland X A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging X Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ YES (circled) multiplier is **2** NO multiplier is **1**	multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	12

D	Depressional and Flats Wetlands	Points
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation	
	D 3. Does the wetland have the potential to reduce flooding and erosion? *(see p. 46)*	
D	D 3.1 Characteristics of surface water flows out of the wetland Wetland has no surface water outlet — points = 4 Wetland has an intermittently flowing, or highly constricted, outlet — points = 2 Wetland is flat and has no obvious outlet and/or outlet is a small ditch — points = 1 Wetland has an unconstricted surface outlet — points = 0	4
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet* Marks of ponding are 3 ft or more above the surface — points = 7 The wetland is a "headwater" wetland" — points = 5 Marks of ponding between 2 ft to < 3 ft from surface — points = 5 Marks are at least 0.5 ft to < 2 ft from surface — points = 3 Wetland is flat but has small depressions on the surface that trap water — points = 1 Marks of ponding less than 0.5 ft — points = 0	5
D	D 3.3 Contribution of wetland to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland itself.* The area of the basin is less than 10 times the area of wetland — points = 5 The area of the basin is 10 to 100 times the area of the wetland — points = 3 The area of the basin is more than 100 times the area of the wetland — points = 0 Wetland is in the FLATS class (basin = the wetland, by definition) — points = 5	3
D	**Total for D 3** *Add the points in the boxes above*	12
D	**D 4. Does the wetland have the opportunity to reduce flooding and erosion?** *(see p. 49)* Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems X Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ **YES** multiplier is **2** **NO** multiplier is **1**	multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	24

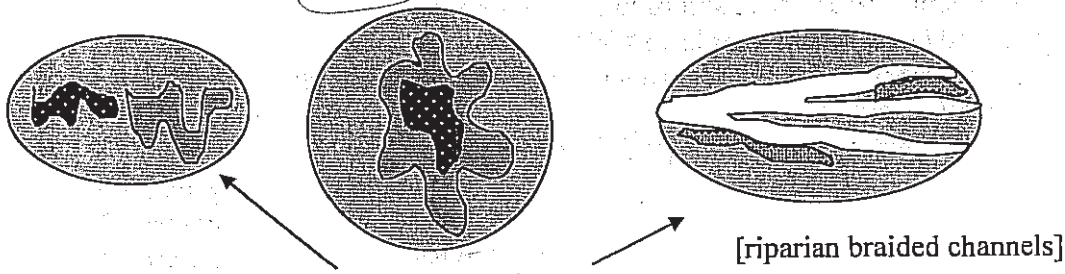
These questions apply to wetlands of all HGM classes.	**Points**
HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat	
H 1. Does the wetland have the potential to provide habitat for many species?	
H 1.1 Vegetation structure ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin) if the class covers more than 10% of the area of the wetland or ¼ acre.* __X__ Aquatic bed ____ Emergent plants __X__ Scrub/shrub (areas where shrubs have >30% cover) ____ Forested (areas where trees have >30% cover) ____ Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) *Add the number of vegetation types that qualify. If you have:* 4 types or more — points = 4 3 types — points = 2 2 types — points = 1 1 type — points = 0	1
H 1.2. Hydroperiods ***(see p. 73)*** *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* __X__ Permanently flooded or inundated __X__ Seasonally flooded or inundated ____ Occasionally flooded or inundated ____ Saturated only ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ ***Lake-fringe wetland*** **= 2 points** ____ ***Freshwater tidal wetland*** **= 2 points** 4 or more types present — points = 3 3 types present — points = 2 2 types present — point = 1	1
H 1.3. Richness of Plant Species ***(see p. 75)*** Count the number of plant species in the wetland that cover at least 10 ft^2. *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* *List species below if you want to:* If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	1

H 1.4. Interspersion of habitats *(see p. 76)*

Decide from the diagrams below whether interspersion between types of vegetation (described in H 1.1), or vegetation types and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



None = 0 points Low = 1 point Moderate = 2 points



High = 3 points [riparian braided channels]

NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".

1

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

____ Standing snags (diameter at the bottom > 4 inches) in the wetland

____ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m)

____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present

__X__ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)*

____ Invasive plants cover less than 25% of the wetland area in each stratum of plants

1

H 1. TOTAL Score - potential for providing habitat
Add the scores in the column above

5

Comments

H 2. Does the wetland have the opportunity to provide habitat for many species?

H 2.1 Buffers *(see p. 80)*

Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. **(relatively undisturbed also means no-grazing)** **Points = 5**

— 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4**

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3**

If buffer does not meet any of the criteria above

— No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— Heavy grazing in buffer. **Points = 1**

— Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.**

X — Buffer does not meet any of the criteria above. **Points = 1**

1

H 2.2 Corridors and Connections *(see p. 81)*

H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*).

YES = **4 points** (*go to H 2.3*) (NO) = go to H 2.2.2

H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above?

YES = **2 points** (*go to H 2.3*) (NO) = H 2.2.3

H 2.2.3 Is the wetland:

within 5 mi (8km) of a brackish or salt water estuary OR
within 3 mi of a large field or pasture (>40 acres) OR
within 1 mi of a lake greater than 20 acres?

YES = **1 point** (NO) = **0 points**

0

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)*

Which of the following priority habitats are within 330ft (100m) of the wetland?
(see text for a more detailed description of these priority habitats)

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

____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

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

____**Old-growth forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age.

____**Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____**Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.

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

____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages

____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____**Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____**Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5ppt. during the period of average annual low flow. Includes both estuaries and lagoons.

____**Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** No-habitats = 0 points

0

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores in the column above*	4
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	9

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT 405 Project S. Renton
Applicant/owner: WSDOT
Investigator(s): IL, AM
Date: 1/5/04
County: King
State: WA
S/T/R: 19/23N/5E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID: upland
Transect ID:
Plot ID: 2.2R-A

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Rubus discolor	S	65	FACU				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 0

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation ____
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations X
Wetland plant database ____
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? yes (no)
Rationale for decision/Remarks:
Dominant plant is FACU

HYDROLOGY

Is it the growing season? yes (no)

Based on: ____ soil temp (record temp ____)
Time of year ____ other (explain)

Dept. of inundation: ____ inches
Depth to free water in pit: ____ inches
Depth to saturated soil: ____ inches

Water Marks: yes (no) on ____
Drift Lines: yes (no)
Oxidized Root (live roots) Channels <12 in. yes (no)
FAC Neutral: yes no
Sediment Deposits: yes (no)
Drainage Patterns: yes (no)
Local Soil Survey: yes (no)
Water-stained Leaves yes (no)

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? yes (no)
Rationale for decision/Remarks:
Soils are not saturated to at least 16" depth. Plot is located up a steep slope from wetland.

SOILS

Map Unit Name (Series & Phase) Urban Land

Drainage Class variable

Taxonomy (subgroup) NA

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-16+	A	2.5Y 4/2	—	—	sandy loam	

Hydric Soil Indicators: (check all that apply)

_____ Histosol
_____ Histic Epipedon
_____ Sulfidic Odor
_____ Aquic Moisture Regime
_____ Reducing Conditions
_____ Gleyed or Low-Chroma (=1) matrix
_____ Matrix chroma ≤ 2 with mottles
_____ Mg or Fe Concretions
_____ High Organic Content in Surface Layer of Sandy Soils
_____ Organic Streaking in Sandy Soils
_____ Listed on National/Local Hydric Soils List
_____ Other (explain in remarks)

Hydric soils present? yes (no)

Rationale for decision/Remarks:

No hydric soil indicators observed

Wetland Determination (circle)

Hydrophytic vegetation present? yes (no)
Hydric soils present? yes (no)
Wetland hydrology present? yes (no)

Is the sampling point within a wetland? yes (no)

Rationale/Remarks:

No wetland criteria met.

NOTES:

DP A is located upslope (N) of wetland 2.2R.
Surrounding upland is primarily RUDI - covered slope.

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT 405 Project S. Renton
Date: 1/5/04
Applicant/owner: WSDOT
County: Kings
State: WA
Investigator(s): AM, JL
S/T/R: 19/23N/5E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID: wetland
Transect ID:
Plot ID: D.DR-B

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Phalaris arundinacea	H	100	FACW				
Rubus discolor	S	15	FACU				
Pseudotsuga menziesii	T	15	FACU				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation ____
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations ____
Wetland plant database ✓
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
Dominant plant is FACW

HYDROLOGY

Is it the growing season? yes (no)

Based on: ____ soil temp (record temp ____)
time of year ____ other (explain)

Water Marks: yes (no) on ____
Drift Lines: yes (no)
Sediment Deposits: yes (no)
Drainage Patterns: (yes) no
Local Soil Survey: yes (no)
Oxidized Root (live roots) Channels <12 in. yes (no)
FAC Neutral: yes no
Water-stained Leaves (yes) no

Dept. of inundation: ____ inches
Depth to free water in pit: ____ inches
Depth to saturated soil: ____ inches

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? (yes) no
Rationale for decision/Remarks:
Signs of seasonal inundation present; hydrology expected to be present in spring.
Wetland hydrology inferred from presence of hydric soil & PHAR.

SOILS

Map Unit Name (Series & Phase) Urban Land

Drainage Class variable

Taxonomy (subgroup) NA

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-8	A	10YR 3/2	7.5YR 4/4	Common, med., distinct	silt loam	
8-16	B	2.5Y 4/2	7.5YR 4/4	Many, med. distinct	Sandy silt loam	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma (=1) matrix
- X Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:

Low chroma matrix w/ mottles observed.

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no		
Hydric soils present?	(yes)	no	Is the sampling point within a wetland?	(yes) no
Wetland hydrology present?	(yes)	no		

Rationale/Remarks:

All 3 wetland criteria present.

NOTES:

Dp. B is located in wetland 2.2R, which is located S of NB 405 to SB SR 167 ramp. Wetland is a RCG dominated depression/ditch that receives road/parking lot runoff.

Wetland is PEM.

Revised 4/97

Wetland name or number WL 2.2A

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 - Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): Wetland 2.2A Date of site visit: 1/2/06

Rated by Jael Pursley/Adam Gale Trained by Ecology? Yes__ No X Date of training____

SEC: 19 TWNSHP: 23 RNGE: 5 Is S/T/R in Appendix D? Yes__ No X

Map of wetland unit: Figure ____ Estimated size _____

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I__ II__ III__ IV X

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	4
Score for Hydrologic Functions	6
Score for Habitat Functions	7
TOTAL score for Functions	17

Category based on SPECIAL CHARACTERISTICS of wetland

I__ II__ Does not Apply X

Final Category (choose the "highest" category from above) IV

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

Wetland name or number 22A

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number 22A

Classification of Wetland Units in Western Washington

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

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

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

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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

NO – go to 3 **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet both** of the following criteria?

___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

___At least 30% of the open water area is deeper than 6.6 ft (2 m)?

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

4. Does the entire wetland unit **meet all** of the following criteria?

____The wetland is on a slope (*slope can be very gradual*),

____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

____The water leaves the wetland **without being impounded**?

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

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

Wetland name or number 2.2A

5. Does the entire wetland unit **meet all** of the following criteria?

____ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

____ The overbank flooding occurs at least once every two years.

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

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

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

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

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

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

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

Wetland name or number 2.2A

D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	*(see p.38)*
D	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) points = 3 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure ___ 1
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES points = 4 NO points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure ___ 1
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0 Map of Hydroperiods	Figure ___ 0
D	**Total for D 1** *Add the points in the boxes above*	2
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland X A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging X Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ **YES** multiplier is **2** **NO** multiplier is **1**	*(see p. 44)* multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	4

Wetland name or number 2.2A

D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
	D 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland" points = 5 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	1
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	3
D	**D 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems X Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ **YES** multiplier is **2** **NO** multiplier is **1**	*(see p. 49)* multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	6

Wetland name or number 2,2A

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ___Aquatic bed __X__Emergent plants __X__Scrub/shrub (areas where shrubs have >30% cover) ___Forested (areas where trees have >30% cover) *If the unit has a forested class check if:* ___The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation structures that qualify. If you have:* 4 structures or more points = 4 3 structures points = 2 2 structures points = 1 1 structure points = 0 Map of Cowardin vegetation classes	Figure ___ 1
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ___Permanently flooded or inundated ___Seasonally flooded or inundated __X__Occasionally flooded or inundated ___Saturated only 4 or more types present points = 3 3 types present points = 2 2 types present point = 1 1 type present points = 0 ___Permanently flowing stream or river in, or adjacent to, the wetland __X__Seasonally flowing stream in, or adjacent to, the wetland ___***Lake-fringe wetland* = 2 points** ___***Freshwater tidal wetland* = 2 points** Map of hydroperiods	Figure ___ 1
H 1.3. Richness of Plant Species *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* If you counted: > 19 species points = 2 *List species below if you want to:* 5 - 19 species points = 1 < 5 species points = 0	1

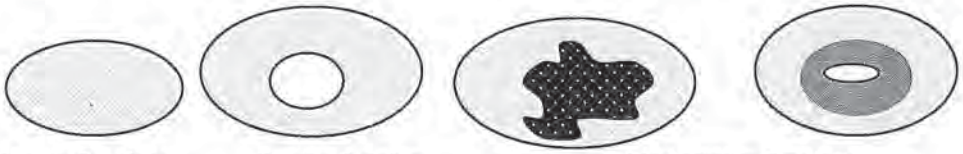
Total for page 3

Wetland name or number 2.24

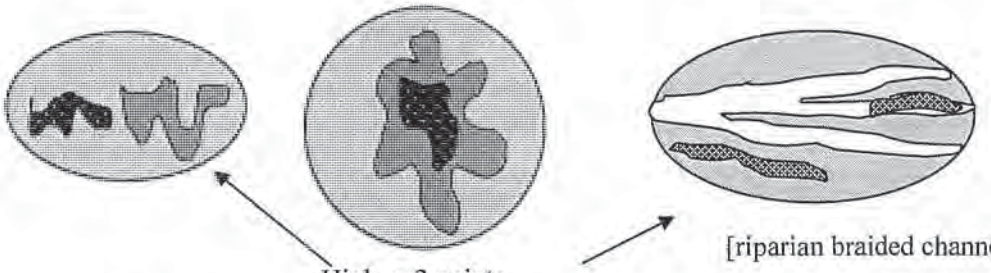
H 1.4. Interspersion of habitats *(see p. 76)*

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.

Figure ___



None = 0 points Low = 1 point Moderate = 2 points



High = 3 points [riparian braided channels]

NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

0

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

____Standing snags (diameter at the bottom > 4 inches) in the wetland

____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

____At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)*

____ Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

0

H 1. TOTAL Score - potential for providing habitat

Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

3

Comments

Wetland name or number 2.2A

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers ***(see p. 80)*** *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** — Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** X Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	Figure ___ 1
H 2.2 Corridors and Connections ***(see p. 81)*** H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	0

Total for page 1

Wetland name or number 2.2A

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)*

Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.*

These are DFW definitions. Check with your local DFW biologist if there are any questions.

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

____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

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

____**Old-growth forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age.

____**Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____**Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.

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

____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages

____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____**Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____**Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5ppt. during the period of average annual low flow. Includes both estuaries and lagoons.

_____**Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has **3 or more** priority habitats = **4 points**

If wetland has **2** priority habitats = **3 points**

If wetland has **1** priority habitat = **1 point** No habitats = 0 points

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)

0

Wetland name or number 22A

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	4
TOTAL for H 1 from page 14	3
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	7

Wetland name or number 2, 2A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands *(see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO X	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number 2.2A

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site ___ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO X SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO X not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 No - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I No X Is not a bog for purpose of rating	**Cat. I**

SC 4.0 Forested Wetlands *(see p. 90)* Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* — **Old-growth forests**: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO X not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* YES = Go to SC 5.1 NO___ not a wetland in a coastal lagoon SC 5.1 Does the wetland meets all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than 1/10 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

Wetland name or number 2.2A

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO __ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula- lands west of SR 103 • Grayland-Westport- lands west of SR 105 • Ocean Shores-Copalis- lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	N/A

Wetland name or number 2.2B

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 - Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): Wetland 2.2B Date of site visit: 1/2/06

Rated by Joe Pursley / Adam Gable Trained by Ecology? Yes__ No X Date of training____

SEC: 19 TWNSHP: 23 RNGE: 5 Is S/T/R in Appendix D? Yes___ No X

Map of wetland unit: Figure ____ Estimated size _____

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___ IV X

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	10
Score for Hydrologic Functions	6
Score for Habitat Functions	8
TOTAL score for Functions	24

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply X

Final Category (choose the "highest" category from above) IV

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

Wetland name or number 2.2B

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number 2, 2B

Classification of Wetland Units in Western Washington

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

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
(NO) – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
(NO) – go to 3 **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;
___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
(NO) – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?
____The wetland is on a slope (*slope can be very gradual*),
____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
____The water leaves the wetland **without being impounded**?
NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*
(NO) - go to 5 **YES** – The wetland class is **Slope**

Wetland name or number 2.2B

5. Does the entire wetland unit **meet all** of the following criteria?

____ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

____ The overbank flooding occurs at least once every two years.

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

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

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

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

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

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

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

Wetland name or number 2, 2B

	Depressional and Flats Wetlands **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	*(see p.38)*
D	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) points = 3 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure ___ 2
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES points = 4 NO points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure ___ 1
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0 Map of Hydroperiods	Figure ___ 2
D	**Total for D 1** *Add the points in the boxes above*	5
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland X A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging X Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ **YES** multiplier is **2** **NO** multiplier is **1**	*(see p. 44)* multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	10

Wetland name or number 2.2B

D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
	D 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland" points = 5 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	1
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	3
D	**D 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems X Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other _____ **YES** multiplier is **2** **NO** multiplier is **1**	*(see p. 49)* multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	6

Wetland name or number 2.2B

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure ***(see p. 72)***	**Figure ___**
Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.	
___Aquatic bed	
X Emergent plants	
X Scrub/shrub (areas where shrubs have >30% cover)	
___Forested (areas where trees have >30% cover)	
If the unit has a forested class check if:	
___The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon	
Add the number of vegetation structures that qualify. If you have:	
4 structures or more points = 4	
Map of Cowardin vegetation classes — 3 structures points = 2	1
2 structures points = 1	
1 structure points = 0	
H 1.2. Hydroperiods ***(see p. 73)***	**Figure ___**
Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)	
___Permanently flooded or inundated — 4 or more types present points = 3	
X Seasonally flooded or inundated — 3 types present points = 2	
___Occasionally flooded or inundated — 2 types present point = 1	
___Saturated only — 1 type present points = 0	
___Permanently flowing stream or river in, or adjacent to, the wetland	
X Seasonally flowing stream in, or adjacent to the wetland	
___***Lake-fringe wetland* = 2 points**	
___***Freshwater tidal wetland* = 2 points** Map of hydroperiods	1
H 1.3. Richness of Plant Species ***(see p. 75)***	
Count the number of plant species in the wetland that cover at least 10 ft^2. *(different patches of the same species can be combined to meet the size threshold)*	
You do not have to name the species.	
Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle	
If you counted: > 19 species points = 2	
List species below if you want to: 5 - 19 species points = 1	
< 5 species points = 0	1

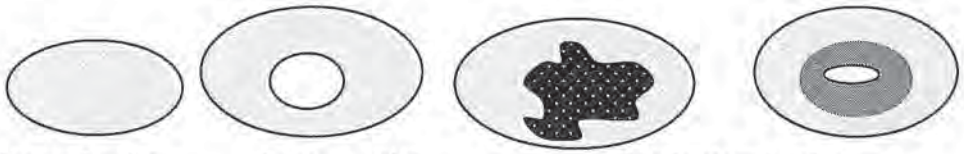
Total for page 3

Wetland name or number 2,2B

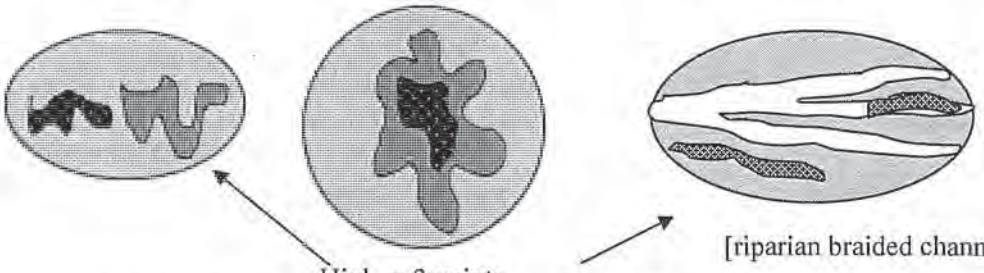
H 1.4. Interspersion of habitats *(see p. 76)*

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.

Figure ___



None = 0 points Low = 1 point Moderate = 2 points



High = 3 points [riparian braided channels]

NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

1

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

____Standing snags (diameter at the bottom > 4 inches) in the wetland

____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

____At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)*

____ Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

0

H 1. TOTAL Score - potential for providing habitat

Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

4

Comments

Wetland name or number 2.2B

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers ***(see p. 80)*** *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** — Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** X Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	Figure ___ 1
H 2.2 Corridors and Connections ***(see p. 81)*** H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	0

Total for page 1

Wetland name or number 2,2B

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)*

Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.*

These are DFW definitions. Check with your local DFW biologist if there are any questions.

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

____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

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

____**Old-growth forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age.

____**Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____**Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.

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

____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages

____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____**Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____**Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5ppt. during the period of average annual low flow. Includes both estuaries and lagoons.

____**Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has **3 or more** priority habitats = **4 points**

If wetland has **2** priority habitats = **3 points**

If wetland has **1** priority habitat = **1 point** No habitats = 0 points

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)

0

Wetland name or number 2.2B

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	4
TOTAL for H 1 from page 14	4
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	8

Wetland name or number 2,23

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands *(see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO Y	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number 2, 2B

SC 2.0 Natural Heritage Wetlands *(see p. 87)*

Cat. I

Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.

SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)*

S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site ___

YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO X

SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species?

YES = Category I NO X not a Heritage Wetland

SC 3.0 Bogs *(see p. 87)*

Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.***

1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No - go to Q. 2
2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond?

   Yes - go to Q. 3 No - Is not a bog for purpose of rating
3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)?

   Yes – Is a bog for purpose of rating No - go to Q. 4

   NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.

1. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?*

2. YES = Category I No X Is not a bog for purpose of rating

Cat. I

SC 4.0 Forested Wetlands *(see p. 90)* Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* — **Old-growth forests**: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO X not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* YES = Go to SC 5.1 NO X not a wetland in a coastal lagoon SC 5.1 Does the wetland meets all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than 1/10 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

Wetland name or number 2, 2B

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO __ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula- lands west of SR 103 • Grayland-Westport- lands west of SR 105 • Ocean Shores-Copalis- lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	N/A

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT 405 Project, S. Renton	Date: 2/16/05
Applicant/owner: WSDOT	County: King
Investigator(s): AM, JC	State: WA S/T/R: 19/23N/5E
Do Normal Circumstances exist on the site? (yes) no	Community ID: Upland
Is the site significantly disturbed (atypical situation)? yes (no)	Transect ID:
Is the area a potential Problem Area? yes (no)	Plot ID: 231R-A
Explanation of atypical or problem area:	

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Agrostis sp.	H	100	FAC				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	____	Physiological/reproductive adaptations	____
		Wetland plant database	X
Morphological adaptations	____	Personal knowledge of regional plant communities	____
Technical Literature	____	Other (explain)	____

Hydrophytic vegetation present? (yes) **no**
Rationale for decision/Remarks:
Dominant plant is FAC

HYDROLOGY

Is it the growing season? yes (no)

Based on: ____ soil temp (record temp ____)
Time of year ____ other (explain)

Water Marks: yes (no) on ____		Sediment Deposits: yes (no)	
Drift Lines: yes (no)		Drainage Patterns: yes (no)	
Dept. of inundation: ____ inches	Oxidized Root (live roots) Channels <12 in. yes (no)	Local Soil Survey: yes (no)	
Depth to free water in pit: ____ inches	FAC Neutral: yes no	Water-stained Leaves yes (no)	
Depth to saturated soil: ____ inches			

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? yes (no)
Rationale for decision/Remarks:
No saturation in soil pit. Plot is located upslope of wetland.

SOILS

Map Unit Name (Series & Phase) Urban land

Drainage Class Variable

Taxonomy (subgroup) NA

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance, size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-4	A	10YR 4/3	—	—	sandy clay loam	
4-16	B	10YR 4/6	7.5YR 5/8	distinct, common, medium	loamy sand	

Hydric Soil Indicators: (check all that apply)

_____ Histosol
_____ Histic Epipedon
_____ Sulfidic Odor
_____ Aquic Moisture Regime
_____ Reducing Conditions
_____ Gleyed or Low-Chroma (=1) matrix
_____ Matrix chroma ≤ 2 with mottles
_____ Mg or Fe Concretions
_____ High Organic Content in Surface Layer of Sandy Soils
_____ Organic Streaking in Sandy Soils
_____ Listed on National/Local Hydric Soils List
_____ Other (explain in remarks)

Hydric soils present? yes (no)

Rationale for decision/Remarks:

No hydric soil indicators present.

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no			
Hydric soils present?	yes	(no)	Is the sampling point within a wetland?	yes	(no)
Wetland hydrology present?	yes	(no)			

Rationale/Remarks:

2 wetland criteria not met.

NOTES:

DP A is located upslope and east of wetland 2.31R. Area is periodically maintained, and dominated by common grasses. Patches of RUDI are present in upland areas as well.

Revised 4/97

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT I-405 S. Renton Nickel	Date: 2/16/05
Applicant/owner: WSDOT	County: King State: WA
Investigator(s): Jeff Collins, Adam Merrill	S/T/R: 9/23N/5E
Do Normal Circumstances exist on the site? (yes) no	Community ID:
Is the site significantly disturbed (atypical situation)? yes (no)	Transect ID:
Is the area a potential Problem Area? yes (no)	Plot ID: DP 2.31R-B
Explanation of atypical or problem area:	

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Phalaris arundinacea	H	90	FACW				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100%

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	____	Physiological/reproductive adaptations	____
		Wetland plant database	X
Morphological adaptations	____	Personal knowledge of regional plant communities	____
Technical Literature	____	Other (explain)	____

Hydrophytic vegetation present? (yes) no

Rationale for decision/Remarks:

100% of dominant plant species are FAC, FACW, or OBL

HYDROLOGY

Is it the growing season? yes (no)

Based on: date soil temp (record temp ____) ____ other (explain)

Dept. of inundation:	___ inches	Water Marks: yes (no) on ____	Sediment Deposits: yes (no)
Depth to free water in pit:	___ inches	Drift Lines: yes (no)	Drainage Patterns: (yes) no
Depth to saturated soil:	16 inches	Oxidized Root (live roots) Channels <12 in. (yes) no	Local Soil Survey: yes (no)
		FAC Neutral: yes no	Water-stained Leaves yes (no)

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? (yes) no

Rationale for decision/Remarks:

Soils contain oxidized rhizospheres and is likely present in the spring

SOILS

Map Unit Name (Series & Phase): Urban land

Drainage Class: variable

Taxonomy (subgroup): NA

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-10	A	10YR 3/2	—	—	clay loam	
10-16	B	10YR 3/2	7.5YR 4/6	distinct, common medium	sandy clay loam	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma (=1) matrix
- X Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:

Chroma of 2 with mottles

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no		
Hydric soils present?	(yes)	no	Is the sampling point within a wetland?	(yes) no
Wetland hydrology present?	(yes)	(no)		

Rationale/Remarks:

Meets all three of the wetland determination criteria

NOTES: PEM depressional wetland located in SE section of 167/I-405 interchange. Water comes as runoff and precipitation. Exits via a culvert at the South end of the wetland.

Revised 4/97

DRAFT WETLAND RATING FORM – WESTERN WASHINGTON

Name of wetland (if known): Wetland 2.31R

Location: SEC: 19 TWNSHP: 23N RNGE: 5E (attach map with outline of wetland to rating form)

Person(s) Rating Wetland: A. Merrill Affiliation: S. Renton WSDOT 405 Project Date of site visit: 8/16/05

DRAFT SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___ IV X

Category I = Score >70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	10
Score for Hydrologic Functions	0
Score for Habitat Functions	5
TOTAL score for functions	15

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply X

Final Category (choose the "highest" category from above) IV

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X		

Does the wetland being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
SP1. *Has the wetland been documented as a habitat for any Federally listed Threatened or Endangered plant or animal species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland been documented as habitat for any State listed Threatened or Endangered plant or animal species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database.		X
SP3. *Does the wetland contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

Wetland Name: _____ **Date:** _____

1. Are the water levels in the wetland usually controlled by tides (i.e. except during floods)?
   (NO) – go to 2 **YES – the wetland class is Tidal Fringe**

   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. Is the topography within the wetland flat and precipitation is only source (>90%) of water to it.
   (NO) – go to 3 **YES – The wetland class is Flats**

   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the wetland **meet both** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) where at least 20 acres (8 ha) are permanently inundated (ponded or flooded);
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
   (NO) – go to 4 **YES – The wetland class is Lake-fringe (Lacustrine Fringe)**

4. Does the wetland **meet all** of the following criteria?
   ____The wetland is on a slope (*slope can be very gradual*),
   ____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ____The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks(depressions are usually <3ft diameter and less than 1 foot deep).*
   (NO) - go to 5 **YES – The wetland class is Slope**

5. Is the wetland in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river? The flooding should occur at least once every two years, on the average, to answer "yes." *The wetland can contain depressions that are filled with water when the river is not flooding.*
   (NO) - go to 6 **YES – The wetland class is Riverine**

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

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

7. Is the wetland located in a very flat area with no obvious depression and no stream or river running through it and providing water. The wetland seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

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

8. Your wetland seems to be difficult to classify. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. Sometimes we find characteristics of several different hydrogeomorphic classes within one wetland boundary. Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland being rated. If the area of the second class is less than 10% classify the wetland using the first class.

HGM Classes Within a Delineated Wetland Boundary	*Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

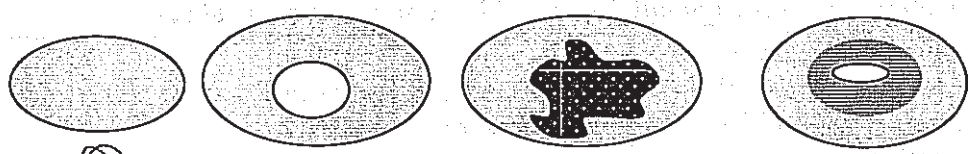
D	Depressional and Flats Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
D	**D 1. Does the wetland have the potential to improve water quality?** *(see p. 38)*	
D	D 1.1 Characteristics of surface water flows out of the wetland: Wetland is a depression with no surface water outlet — points = 3 Wetland has an intermittently flowing, or highly constricted, outlet — points = 2 Wetland has an unconstricted surface outlet — points = 1 Wetland is flat and has no obvious outlet and/or outlet is a ditch — points = 1	1
D	D 1.2 The soil 2 inches below the surface is clay, organic, or smells anoxic (hydrogen sulfide or rotten eggs). YES — points = 4 NO — points = 0	4
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest class): Wetland has persistent, ungrazed, vegetation >= 95% of area — points = 5 Wetland has persistent, ungrazed, vegetation >= 1/2 of area — points = 3 Wetland has persistent, ungrazed vegetation >= 1/10 of area — points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area — points = 0	0
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland — points = 4 Area seasonally ponded is > ¼ total area of wetland — points = 2 Area seasonally ponded is < ¼ total area of wetland — points = 0 NOTE: *See text for indicators of seasonal and permanent inundation..*	0
D	**Total for D 1** *Add the points in the boxes above*	5
D	**D 2. Does the wetland have the opportunity to improve water quality?** *(see p. 44)* Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants.* — Grazing in the wetland or within 150 ft X Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other _____ YES multiplier is 2 NO multiplier is 1	multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 *Add score to table on p. 1*	10

D	Depressional and Flats Wetlands	Points
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation	
	D 3. Does the wetland have the potential to reduce flooding and erosion? *(see p. 46)*	
D	D 3.1 Characteristics of surface water flows out of the wetland Wetland has no surface water outlet points = 4 Wetland has an intermittently flowing, or highly constricted, outlet points = 2 Wetland is flat and has no obvious outlet and/or outlet is a small ditch points = 1 Wetland has an unconstricted surface outlet points = 0	0
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet* Marks of ponding are 3 ft or more above the surface points = 7 The wetland is a "headwater" wetland" points = 5 Marks of ponding between 2 ft to < 3 ft from surface points = 5 Marks are at least 0.5 ft to < 2 ft from surface points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	0
D	D 3.3 Contribution of wetland to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland itself.* The area of the basin is less than 10 times the area of wetland points = 5 The area of the basin is 10 to 100 times the area of the wetland points = 3 The area of the basin is more than 100 times the area of the wetland points = 0 Wetland is in the FLATS class (basin = the wetland, by definition) points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	0
D	**D 4. Does the wetland have the opportunity to reduce flooding and erosion?** *(see p. 49)* Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems X Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ **YES** multiplier is 2 **NO** multiplier is 1	multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 *Add score to table on p. 1*	0

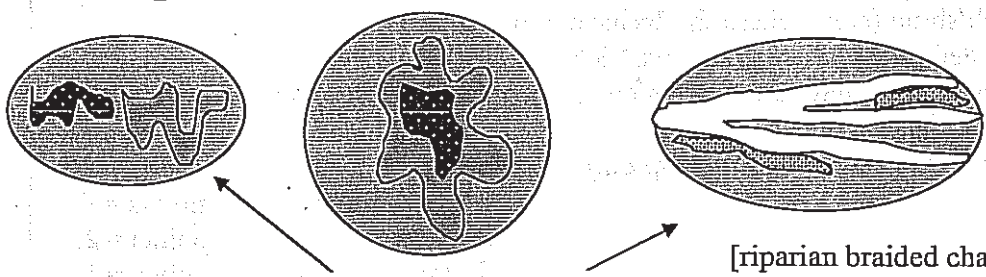
These questions apply to wetlands of all HGM classes.	Points
HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat	
H 1. Does the wetland have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin) if the class covers more than 10% of the area of the wetland or ¼ acre.* ___ Aquatic bed __X__ Emergent plants ___ Scrub/shrub (areas where shrubs have >30% cover) ___ Forested (areas where trees have >30% cover) ___ Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) *Add the number of vegetation types that qualify. If you have:* 4 types or more — points = 4 3 types — points = 2 2 types — points = 1 1 type — points = 0	0
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ___ Permanently flooded or inundated __X__ Seasonally flooded or inundated ___ Occasionally flooded or inundated __X__ Saturated only ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** 4 or more types present — points = 3 3 types present — points = 2 2 types present — point = 1	1
H 1.3. Richness of Plant Species *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* *List species below if you want to:* If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	0

H 1.4. Interspersion of habitats *(see p. 76)*

Decided from the diagrams below whether interspersion between types of vegetation (described in H 1.1), or vegetation types and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



None = 0 points Low = 1 point Moderate = 2 points



[riparian braided channels]

High = 3 points

NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".

0

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

____Standing snags (diameter at the bottom > 4 inches) in the wetland

____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m)

____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present

____At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)*

____ Invasive plants cover less than 25% of the wetland area in each stratum of plants

0

H 1. TOTAL Score - potential for providing habitat
Add the scores in the column above

1

Comments

H 2. Does the wetland have the opportunity to provide habitat for many species?

H 2.1 Buffers *(see p. 80)*

Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. **(relatively undisturbed also means no-grazing)** **Points = 5**

— 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4**

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3**

If buffer does not meet any of the three criteria above

— No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— Heavy grazing in buffer. **Points = 1**

— Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.**

+ Buffer does not meet any of the criteria above. **Points = 1**

1

H 2.2 Corridors and Connections *(see p. 81)*

H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*).

YES = **4 points** (*go to H 2.3*) (NO) = go to H 2.2.2

H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above?

YES = **2 points** (*go to H 2.3*) (NO) = H 2.2.3

0

H 2.2.3 Is the wetland:

within 5 mi (8km) of a brackish or salt water estuary OR
within 3 mi of a large field or pasture (>40 acres) OR
within 1 mi of a lake greater than 20 acres?

YES = **1 point** (NO) = **0 points**

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)*

Which of the following priority habitats are within 330ft (100m) of the wetland?
(see text for a more detailed description of these priority habitats)

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

____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

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

____**Old-growth forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age.

____**Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____**Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.

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

____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages

____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____**Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____**Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5% during the period of average annual low flow. Includes both estuaries and lagoons.

_____**Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** No habitats = 0 points

0

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores in the column above*	4
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	5

Near flag #4

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

2.68

Project/Site: 405 TRIP Applicant/owner: WSDOT Investigator(s): C. Douglas, S. Purdy	Date: 3/8/16 County: King State: WA S/T/R: 20/23N/5E
Do normal circumstances exist on the site? ☑ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No Is the area a potential problem area? ☐ Yes ☑ No Explanation of atypical or problem area:	Community ID: Transect ID: Plot ID: 2.68R (WET) Sp #1

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
ACEMAC	T	20	FAC	EPI WAT	H	10	FACW-
COR SER	S	60	FACW	PHA ARU	H	10	FACW
RUB PRO	S	30	FACU	LQN THL	H	5	FACW
CYS MON	H	60	OBL				
ATH FIL	H	30	FAC				
SOL DUL	H	10	FAC+				

HYDROPHYTIC VEGETATION INDICATORS: T = 0/20 = 0% S = 60/90 = 66% H = 90/90 = 100%

% of dominants OBL, FACW, & FAC: 150/200 = 75%

Check all indicators that apply and explain below:

- ☑ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☑ Morphological adaptations
- ☑ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☑ Wetland plant database
- ☑ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale for decision/Remarks: 75% Dom. species

HYDROLOGY

Is it the growing season? ☑ Yes ☐ No Based on: ☐ Soil temp (record temp) ☐ Other (explain)	Water Marks: ☐ Yes ☑ No on	Sediment Deposits: ☐ Yes ☑ No
	Drift Lines: ☐ Yes ☑ No	Drainage Patterns: ☑ Yes ☐ No
Depth of inundation: 0 inches Depth to free water in pit: @ surface Depth to saturated soil: @ surface	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☑ No FAC Neutral: ☐ Yes ☐ No	Local Soil Survey: ☐ Yes ☐ No Water-stained Leaves: ☑ Yes ☐ No
Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):	

Wetland hydrology present? ☑ Yes ☐ No

Rationale for decision/remarks: Saturation & free water in pit.

SOILS

Map Unit Name (Series and Phase): Beausite gravelly sandy loam — Drainage Class

Field observations confirm mapped type? ☐ Yes ☑ No

Taxonomy (subgroup) 6 to 15% Slopes

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-18"		10YR 2/1	-	-	Silt loam	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☑ Yes ☐ No

Rationale for decision/Remarks: Low chroma

Wetland Determination

Hydrophytic vegetation present?	☑ Yes	☐ No
Hydric soils present?	☑ Yes	☐ No
Wetland hydrology present?	☑ Yes	☐ No
Is the sampling point within a wetland?	☑ Yes	☐ No

Rationale/Remarks: 3 of 3 parameters

NOTES:

Revised 4/97

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual) 2.6R

Project/Site: 405 TRIP Applicant/owner: WSDOT Investigator(s): Douglas Burnley	Date: 8/8/06 County: King State: WA S/T/R: 29/23N/5E
Do normal circumstances exist on the site? ☑ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No Is the area a potential problem area? ☐ Yes ☑ No Explanation of atypical or problem area:	Community ID: Transect ID: Plot ID: SP #2 (UP) 2.6R

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
ACEMAC	T	80	FACU				
OEMCER	S	50	FACU				
RUBARM	S	60	FACU				
CORSER	S	40	FACW				
EQUTEL	H	10	FACW				

HYDROPHYTIC VEGETATION INDICATORS: T = 0/80 = 0% S = 40/150 = 27% H = no Dom.

% of dominants OBL, FACW, & FAC: 40/230 = 17%

Check all indicators that apply and explain below:

- ☐ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☑ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☑ Wetland plant database
- ☑ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale for decision/Remarks: 15% Dom Wet Veg

HYDROLOGY

Is it the growing season? ☑ Yes ☐ No

Based on: ☐ Soil temp (record temp) ☑ Other (explain) Date Assist

Depth of inundation: Ø inches

Depth to free water in pit: Ø

Depth to saturated soil: Ø

Water Marks: ☐ Yes ☑ No	Sediment Deposits: ☐ Yes ☑ No
on	
Drift Lines: ☐ Yes ☑ No	Drainage Patterns: ☐ Yes ☑ No
Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☑ No	Local Soil Survey: ☐ Yes ☑ No
FAC Neutral: ☐ Yes ☑ No	Water-stained Leaves: ☐ Yes ☑ No

Check all that apply & explain below:

- ☐ Stream, lake or gage data
- ☐ Aerial photographs
- ☐ Other

Other (explain):

Wetland hydrology present? ☐ Yes ☑ No

Rationale for decision/remarks: No Hydric Indicators.

SOILS

Map Unit Name (Series and Phase): Beavite gravelly sandy loam

Drainage Class

Field observations confirm mapped type? ☐ Yes ☑ No

Taxonomy (subgroup) 6 to 15% Slopes

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-18"		10YR 4/2 to 4/3	-	—	Silt loam	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☐ Yes ☑ No

Rationale for decision/Remarks: High chroma, no mottles

Wetland Determination

Hydrophytic vegetation present?	☐ Yes	☑ No
Hydric soils present?	☐ Yes	☑ No
Wetland hydrology present?	☐ Yes	☑ No
Is the sampling point within a wetland?	☐ Yes	☑ No

Rationale/Remarks: 0 of 3 parameters

NOTES:

Revised 4/97

Wetland name or number 2.6R

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 2.6R Date of site visit: 8/8/06

Rated by: Douglas, Pursley Trained by Ecology? Yes____ No ✓ Date of training: —

SEC: 20 TWNSHP: 23N RNGE: 5E Is S/T/R in Appendix D? Yes____ No ✓

Map of wetland unit: Figure____ Estimated size 0.13 Acre

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I____ II____ III ✓ IV____

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	16
Score for Hydrologic Functions	20
Score for Habitat Functions	12
TOTAL Score for Functions	48

Category based on SPECIAL CHARACTERISTCS of Wetland I____ II____ Does not apply ✓

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics	
Estuarine	
Natural Heritage Wetland	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	

Wetland HGM Class used for Rating	
Depressional	
Riverine	✓
Lake-fringe	
Slope	
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		✓

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number 2.62

Classification of Vegetated Wetlands for Western Washington

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

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   _____ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   _____ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   _____ The wetland is on a slope *(slope can be very gradual)*.
   _____ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   _____ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   _____ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   _____ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

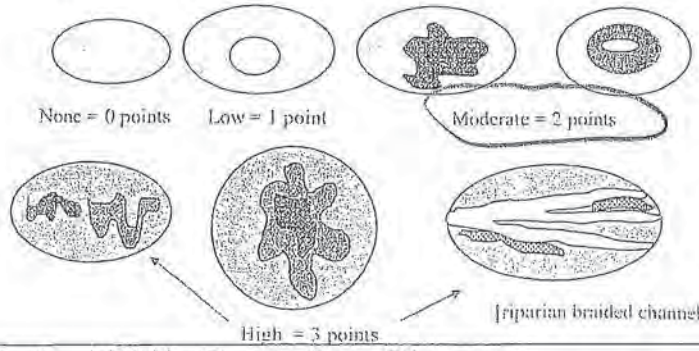
If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

Wetland name or number 2.62

R	Riverine and Freshwater Tidal Fringe Wetlands	Points (only 1 score per box)
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	
R 1	**Does the wetland have the potential to improve water quality?** *(see p.52)*	
	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: • Depressions cover > 3/4 area of wetland ..... points = 8 • Depressions cover > 1/2 area of wetland ..... points = 4 **(If depressions > 1/2 of area of unit draw polygons on aerial photo or map)** • Depressions present but cover < 1/2 area of wetland. ..... points = 2 • No depressions present ..... points = 0	Figure ___ 2
	R 1.2 Characteristics of the vegetation in the unit (areas with >90% cover at person height): • Trees or shrubs > 2/3 area of the unit ..... points = 8 • Trees or shrubs > 1/3 area of the wetland ..... points = 6 • Ungrazed, herbaceous plants > 2/3 area of unit ..... points = 6 • Ungrazed herbaceous plants > 1/3 area of unit ..... points = 3 • Trees, shrubs, and ungrazed herbaceous < 1/3 area of unit ..... points = 0 **Aerial photo or map showing polygons of different vegetation types**	Figure ___ 6
	Add the points in the boxes above	8
R 2	**Does the wetland have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ✓ Grazing in the wetland or within 150 ft ___ Untreated stormwater discharges to wetland ___ Tilled fields or orchards within 150 ft. of wetland ✓ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ✓ Residential, urban areas, golf courses are within 150 ft. of wetland ___ The river or stream linked to the wetland has a contributing basin where human activities have raised levels of sediment, toxic compounds or nutrients in the river water above standards for water quality. ___ Other _____ **YES** multiplier is 2 **NO** multiplier is 1	*(see p. 53)* 2 Multiplier 2
◆	**TOTAL – Water Quality Functions** Multiply the score from R1 by R2; then ***add score to table on p. 1***	16
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.	
R 3	**Does the wetland have the potential to reduce flooding and erosion?**	*(see p.54)*
	R 3.1 Characteristics of the overbank storage the wetland provides: *Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of unit) / (average width of stream between banks).* • If the ratio is more than 20 ..... points = 9 • If the ratio is between 10 – 20 ..... points = 6 • If the ratio is 5- <10 ..... points = 4 • If the ratio is 1- <5 ..... points = 2 • If the ratio is < 1 ..... points = 1 **Aerial photo or map showing average widths**	Figure ___ 6
	R 3.2 Characteristics of vegetation that slow down water velocities during floods: *Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description. (polygons need to have >90% cover at person height NOT Cowardin classes):* • Forest or shrub for > 1/3 area OR herbaceous plants > 2/3 area ..... points = 7 • Forest or shrub for > 1/10 area OR herbaceous plants > 1/3 area ..... points = 4 • Vegetation does not meet above criteria ..... points = 0 **Aerial photo or map showing polygons of different vegetation types**	Figure ___ 4
	Add the points in the boxes above	10
R 4	**Does the wetland have the opportunity to reduce flooding and erosion?** Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. *Note which of the following conditions apply.* ✓ There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding. ___ There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding ___ Other _____ *(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike)* **YES** multiplier is 2 **NO** multiplier is 1	*(see p.57)* Multiplier 2
◆	**TOTAL – Hydrologic Functions** Multiply the score from R3 by R4; then *add score to table on p. 1*	20

Comments:

Wetland name or number 2.6R

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.		Points (only 1 score per box)
H 1	**Does the wetland have the potential to provide habitat for many species?**	
	H 1.1 Vegetation structure *(see P. 72)*: *Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.* ✓ Aquatic Bed ✓ Emergent plants ✓ Scrub/shrub (areas where shrubs have > 30% cover) ___ Forested (areas where trees have > 30% cover) *If the unit has a forested class check if:* ___ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. *Add the number of vegetation types that qualify. If you have:* 4 structures or more..... points = 4 2 structures..... points = 1 **Map of Cowardin vegetation classes** 3 structures..... points = 2 1 structure ..... points = 0	Figure ___ 1
	H 1.2 Hydroperiods *(see p.73)*: *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).* ___ Permanently flooded or inundated ✓ Seasonally flooded or inundated ___ Occasionally flooded or inundated ✓ Saturated only ___ Permanently flowing stream or river in, or adjacent to, the wetland ✓ Seasonally flowing stream in, or adjacent to, the wetland ___ **Lake-fringe wetland.....= 2 points** ___ **Freshwater tidal wetland.....= 2 points** 4 or more types present points = 3 3 or more types present..... points = 2 2 types present..... points = 1 1 type present..... points = 0 **Map of hydroperiods**	Figure ___ 2
	H 1.3 Richness of Plant Species *(see p. 75)*: Count the number of plant species in the wetland that cover at least 10 ft² *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.* If you counted: > 19 species ..... points = 2 5 – 19 species ..... points = 1 < 5 species ..... points = 0 List species below if you want to:	1
	H 1.4 Interspersion of Habitats *(see p. 76)*: Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". **Use map of Cowardin classes.**	Figure ___ 2
	H 1.5 Special Habitat Features *(see p. 77)*: *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* X Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) ___ Standing snags (diameter at the bottom > 4 inches) in the wetland ___ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) ___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ___ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ___ Invasive plants cover less than 25% of the wetland area in each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	1
	H 1 TOTAL Score – potential for providing habitat *Add the points in the column above*	7

Wetland name or number 2.6R

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use).. .....**points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference.....**points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference.....**points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference.....**points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .....**points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK.....**points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK.....**points = 2** ____ Heavy grazing in buffer.....**points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland).....**points = 0** ____ Buffer does not meet any of the criteria above .....**points = 1** **Arial photo showing buffers**	**Figure** ___ 2
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* **YES = 4 points** (go to H 2.3) **NO** = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? **YES = 2 points** (go to H 2.3) **NO** = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR • Within 1 mile of a lake greater than 20 acres? **YES** = 1 point **NO** = 0 points	Ø

Comments:

Wetland name or number 2.60

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82):
Which of the following priority habitats are within 330 ft. (100m) of the wetland? *NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.*

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

____ **Aspen Stands**: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)

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

____ **Old-growth forests**: (Old growth west of Cascade Crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings, with at least 20 trees/ha (8 trees/acre) > 81cm (32 in) dbh or > 200 years of age.

____ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade Crest.

____ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.

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

____ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages.

____ **Oregon white Oak**: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____ **Estuary/Estuary-like**: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons.

____ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has 3 or more priority habitats .= 4 points If wetland has 1 priority habit ...= 1 point
If wetland has 2 priority habitats .....= 3 points No habitats.....= 0 points
Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. (Nearby wetlands are addressed in question H 2.4).

Ø

H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)*

- There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development.....points = 5
- The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile .....points = 5
- There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed.....points = 3
- The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile.....points = 3
- There is at least 1 wetland within 1/2 mile.....points = 2
- There are no wetlands within 1/2 mile .....points = 0

3

	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	7
	TOTAL for H 1 from page 8	5
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then *record the result on p. 1*	12

Comments:

Wetland name or number 2.66

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ___ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ___ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. **YES** = Category I **NO** = ___ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ___ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ___ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* **YES** = Go to SC 5.1 **NO** ___ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ___ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ___ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ___ The wetland is larger than 1/10 acre (4350 square ft.) **YES** = Category I **NO** = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? **YES** = Go to SC 6.1 **NO** ___ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? **YES** = Category II **NO** = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? **YES** = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered **NO** for all types enter "Not Applicable" on p. 1	NA

Comments:

Wetland name or number 2.602

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ___ The dominant water regime is tidal, ___ Vegetated, and ___ With a salinity greater than 0.5 ppt. **YES** = Go to SC 1.1 **NO** ___	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? **YES** = Category I **NO** = go to SC 1.2	Cat. 1
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? **YES** = Category I **NO** = Category II ___ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ___ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ___ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	Cat. I Cat. II Dual Rating I/II
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D _____ or accessed from WNHP/DNR web site _____ **YES** ___ Contact WNHP/DNR (see p. 79) and go to SC 2.2 **NO** _____ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? **YES** = Category 1 **NO** _____ not a Heritage Wetland	Cat I
SC3	**Bogs** *(see p. 87)* Does the wetland (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? **YES** = go to question 3 **NO** = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? **YES** = go to question 3 **NO** = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? **YES** = Is a bog for purpose of rating **NO** = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)*? **YES** = Category I **NO** = Is not a bog for purpose of rating	Cat. I

Routine Wetland Determination

DATA FORM 1 *(Revised)* Near WF #324 2.7R

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: 405 TRIP Applicant/owner: WSDOT Investigator(s): C. Douglas, J. Bursley	Date: 8/1/06 County: King State: WA S/T/R: 20/23N/5E
Do normal circumstances exist on the site? ☑ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No Is the area a potential problem area? ☐ Yes ☑ No Explanation of atypical or problem area:	Community ID: Transect ID: Plot ID: 2.7R SP 1 (WET)

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
SALLAS	T	60	FACW+	SCIMIC	H	40	OBL
RUBSPE	S	40	FACW	RANREP	H	10	FACW
SALLAS	S	5	FACW+	SOLDUL	H	5	FAC+
				ATHFIL	H	5	FAC
				EQUTEL	H	5	FACW
				EPIWAT	H	T	FACW+

HYDROPHYTIC VEGETATION INDICATORS: RUBPE - growing over veg T = 60/60 = 100, S = 0/40 = 0%, H = 40/40 = 100%

% of dominants OBL, FACW, & FAC: 100/140 = 71%

Check all indicators that apply and explain below:

- ☑ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☑ Wetland plant database
- ☑ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale for decision/Remarks: 71% dominant species, RUBPE growing over veg.

HYDROLOGY

Is it the growing season? ☑ Yes ☐ No	Water Marks: ☐ Yes ☑ No on	Sediment Deposits: ☐ Yes ☑ No
Based on: ☐ Soil temp (record temp) ☑ Other (explain) August	Drift Lines: ☐ Yes ☑ No	Drainage Patterns: ☑ Yes ☐ No
Depth of inundation: 0 inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☑ No	Local Soil Survey: ☐ Yes ☑ No
Depth to free water in pit: 10"	FAC Neutral: ☑ Yes ☐ No	Water-stained Leaves: ☑ Yes ☐ No
Depth to saturated soil: Surface		
Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):	

Wetland hydrology present? ☑ Yes ☐ No

Rationale for decision/remarks: Saturation, free water in pit

SOILS

Map Unit Name (Series and Phase): Beawire gravelly sandy loam — Drainage Class

Field observations confirm mapped type? ☐ Yes ☑ No

Taxonomy (subgroup) 6 to 15% slopes

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-1"	organic	duff				
1-5"		10YR 2/1	—	—	Silt loam	lots of organic matter
5-18"+		GLY 4/10BG	—	—	Sandy loam	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☑ Yes ☐ No

Rationale for decision/Remarks: Low chroma with gleyed

Wetland Determination

Hydrophytic vegetation present?	☑ Yes	☐ No
Hydric soils present?	☑ Yes	☐ No
Wetland hydrology present?	☑ Yes	☐ No
Is the sampling point within a wetland?	☑ Yes	☐ No

Rationale/Remarks: 3 of 3 parameters.

NOTES:

Revised 4/97

Routine Wetland Determination Near WF-10

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: 405 TRIP Applicant/owner: WSDOT Investigator(s): C. Douglas, J. Pursley	Date: 8/1/06 County: King State: WA S/T/R: 20/23N/5E
Do normal circumstances exist on the site? ☑ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No Is the area a potential problem area? ☐ Yes ☑ No Explanation of atypical or problem area:	Community ID: Transect ID: Plot ID: [illegible] SP - 2 (UP) 2.7R

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
CLADOVG	T	20	FAC	EQUTEL	H	T	FACW
CORCOR	T	60	FACW				
RUBSPE	S	100	FAC				
POLMUN	H	5	FAC				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: T = 20/80 = 25%, S = 0/100 = 0%, Total 20/80 = 11%

Check all indicators that apply and explain below:

- ☐ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☐ Wetland plant database
- ☑ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale for decision/Remarks: 11% fac or wetter dominant species

HYDROLOGY

Is it the growing season? ☑ Yes ☑ No

Based on: ☐ Soil temp (record temp) ☑ Other (explain) August

Depth of inundation: 0 inches

Depth to free water in pit: 0

Depth to saturated soil: 0

Water Marks: ☐ Yes ☑ No on

Drift Lines: ☐ Yes ☑ No

Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☑ No

FAC Neutral: ☐ Yes ☑ No

Sediment Deposits: ☐ Yes ☑ No

Drainage Patterns: ☐ Yes ☑ No

Local Soil Survey: ☐ Yes ☑ No

Water-stained Leaves: ☐ Yes ☑ No

Check all that apply & explain below:

- ☐ Stream, lake or gage data
- ☐ Aerial photographs
- ☐ Other

Other (explain):

Wetland hydrology present? ☐ Yes ☑ No

Rationale for decision/remarks: No hydric features

SOILS

Map Unit Name (Series and Phase): Beavite gravelly sandy loam — Drainage Class

Field observations confirm mapped type? ☐ Yes ☑ No

Taxonomy (subgroup) 6 TO 15% Slopes

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-13"		10YR 4/3	—	—	Silt loam	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☐ Yes ☑ No

Rationale for decision/Remarks: High chroma, no matter.

Wetland Determination

Hydrophytic vegetation present?	☐ Yes	☑ No
Hydric soils present?	☐ Yes	☑ No
Wetland hydrology present?	☐ Yes	☑ No
Is the sampling point within a wetland?	☐ Yes	☑ No

Rationale/Remarks: 0 of 3 parameters met

NOTES:

Revised 4/97

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual) 2.752

Project/Site: 405 TRIP Applicant/owner: WSDOT Investigator(s): C. Douglas, J. Parsley	Date: 8/1/06 County: King State: WA S/T/R: 20/23N/5E
Do normal circumstances exist on the site? ☑ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No Is the area a potential problem area? ☐ Yes ☑ No Explanation of atypical or problem area:	Community ID: Transect ID: Plot ID: sp#3 (Wet) 2.752

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
RUBPRO	S	30	FACU	SOLDUL	H	T	FACU
TYPLAT	H	40	OBL				
LYSAME	H	50	OBL				
ATHFIL	H	20	FAC				
PHAARU	H	10	FACW				
EPIWAT	H	T	FACW-				

HYDROPHYTIC VEGETATION INDICATORS: S = 0/30 = 0% H = 110/110 = 100%

% of dominants OBL, FACW, & FAC: 110/140 = (79%) RUBPRO growing over veg.

Check all indicators that apply and explain below:

- ☑ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☑ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☑ Wetland plant database
- ☑ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale for decision/Remarks: 79% dominant wetland species with RUBPRO overves

HYDROLOGY

Is it the growing season? ☑ Yes ☐ No Based on: ☐ Soil temp (record temp) ☐ Other (explain) August	Water Marks: ☐ Yes ☑ No on	Sediment Deposits: ☐ Yes ☑ No
	Drift Lines: ☐ Yes ☑ No	Drainage Patterns: ☑ Yes ☐ No
Depth of inundation: None @ inches Depth to free water in pit: 8" Depth to saturated soil: @ surface	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☑ No FAC Neutral: ☑ Yes ☐ No	Local Soil Survey: ☐ Yes ☑ No Water-stained Leaves: ☑ Yes ☐ No
Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):	

Wetland hydrology present? ☑ Yes ☐ No

Rationale for decision/remarks: Saturation, free water in pit

SOILS

Map Unit Name (Series and Phase): Beavite gravelly sandy loam — Drainage Class: Field observations confirm mapped type? ☐ Yes ☑ No

Taxonomy (subgroup): 6 to 15% slopes

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-18"		10YR2/1	—	—	Silt loam	highly organic

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☑ Yes ☐ No

Rationale for decision/Remarks: Low chroma

Wetland Determination

Hydrophytic vegetation present?	☑ Yes	☐ No
Hydric soils present?	☑ Yes	☐ No
Wetland hydrology present?	☑ Yes	☐ No
Is the sampling point within a wetland?	☑ Yes	☐ No

Rationale/Remarks: 3 of 3 parameters.

NOTES:

Revised 4/97

Routine Wetland Determination

4.2 flags in wetland

2.78

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: 405 TRIP
Applicant/owner: WSDOT
Investigator(s): C. Douglas, S. Pursley

Date: 8/1/06
County: King
State: WA
S/T/R: 20/23N/5E

Do normal circumstances exist on the site? ☑ Yes ☐ No
Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No
Is the area a potential problem area? ☐ Yes ☑ No
Explanation of atypical or problem area:

Community ID:
Transect ID:
Plot ID: 2.78 SP #4 (wet)

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
ALRU	S	30	FAC	SCIRMIC	H	70	OBL
RUSP	S	20	FACW	EQUTEL	H	30	FACW
				JUNEFF	H	10	FACW
				RANREP	H	30	FACW

HYDROPHYTIC VEGETATION INDICATORS: S = 30/50 = 60% RUBRSPEC growing over veg

% of dominants OBL, FACW, & FAC: 160/180 = 89%

Check all indicators that apply and explain below:

☑ Visual observation of plant species growing in areas of prolonged inundation/saturation
☐ Morphological adaptations
☑ Technical Literature
☑ Physiological/reproductive adaptations
☑ Wetland plant database
☑ Personal knowledge of regional plant communities
☐ Other (explain)

Hydrophytic vegetation present? ☑ Yes ☐ No
Rationale for decision/Remarks: 89% dominant wetland species

HYDROLOGY

Is it the growing season? ☑ Yes ☐ No
Based on: ☐ Soil temp (record temp) ☐ Other (explain) August

Water Marks: ☐ Yes ☑ No on
Drift Lines: ☐ Yes ☑ No
Sediment Deposits: ☐ Yes ☑ No
Drainage Patterns: ☑ Yes ☐ No

Depth of inundation: 0 inches
Depth to free water in pit: 11"
Depth to saturated soil: 8"

Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☑ No
FAC Neutral: ☑ Yes ☐ No
Local Soil Survey: ☐ Yes ☑ No
Water-stained Leaves: ☑ Yes ☐ No

Check all that apply & explain below:
☐ Stream, lake or gage data
☐ Aerial photographs
☐ Other

Other (explain):

Wetland hydrology present? ☑ Yes ☐ No
Rationale for decision/remarks: Saturation & free water in pit

SOILS

Map Unit Name (Series and Phase): Recluse gravelly sandy loam — Drainage Class

Field observations confirm mapped type? ☐ Yes ☒ No

Taxonomy (subgroup) 6 to 15 % Slopes

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-4"		10YR 4/1	—	—	SiLoam	
4-18"+		10YR 3/2	5YR 4/6 2.5Y 6/6	common, med, prom common, med, prom	Loam	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma (=1) matrix
- ☑ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☑ Yes ☐ No

Rationale for decision/Remarks:

Wetland Determination

Hydrophytic vegetation present?	☑ Yes	☐ No
Hydric soils present?	☑ Yes	☐ No
Wetland hydrology present?	☑ Yes	☐ No
Is the sampling point within a wetland?	☑ Yes	☐ No

Rationale/Remarks: 3 of 3 parameters

NOTES:

Revised 4/97

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual) 2.76

Project/Site: 405 TRIP Applicant/owner: WSDOT Investigator(s): C. Douglas, J. Burdley	Date: 8/1/06 County: King State: WA S/T/R: 20/23N/5E
Do normal circumstances exist on the site? ☑ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No Is the area a potential problem area? ☐ Yes ☑ No Explanation of atypical or problem area:	Community ID: Transect ID: Plot ID: SL 2.8 SP#5 (WP) 2.76

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
CORCOR	T	10	FACW				
ALNRUB	S	10	FAC				
RUBBRAC	S	90	FACW				
ILEAQU	S	T	FACW				
EQUTEL	H	40	FACW				

HYDROPHYTIC VEGETATION INDICATORS: S = 0/90 = 0%, H = 40/40 = 100%, T = 40/130 = 31%

% of dominants OBL, FACW, & FAC: 31%

Check all indicators that apply and explain below:

- ☐ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☐ Wetland plant database
- ☐ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale for decision/Remarks: 31% dom, FAC veg.

HYDROLOGY

Is it the growing season? ☑ Yes ☐ No	Water Marks: ☐ Yes ☑ No on	Sediment Deposits: ☐ Yes ☑ No
Based on: ☐ Soil temp (record temp) ☐ Other (explain) August	Drift Lines: ☐ Yes ☑ No	Drainage Patterns: ☐ Yes ☑ No
Depth of inundation: 0 inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☑ No	Local Soil Survey: ☐ Yes ☑ No
Depth to free water in pit: 0	FAC Neutral: ☐ Yes ☑ No	Water-stained Leaves: ☐ Yes ☑ No
Depth to saturated soil: 0		
Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):	

Wetland hydrology present? ☐ Yes ☑ No

Rationale for decision/remarks: No hydric features

SOILS

Map Unit Name (Series and Phase): Beavite gravelly sandy loam, 6 to 15% slopes — Drainage Class

Field observations confirm mapped type? ☐ Yes ☐ ~~No~~

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-6"		10YR 5/3	—	—	Loam	
6-18"		5Y 6/4	7.5YR 5/8	few, fine, ~~distinct~~	Sandy clay	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☐ Yes ☑ No

Rationale for decision/Remarks: No low chroma or mottles

Wetland Determination

Hydrophytic vegetation present?	☐ Yes	☑ No
Hydric soils present?	☐ Yes	☑ No
Wetland hydrology present?	☐ Yes	☑ No
Is the sampling point within a wetland?	☐ Yes	☑ No

Rationale/Remarks: 0 of 3 parameters

NOTES:

Revised 4/97

Wetland name or number 2.76

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 2.76 Date of site visit: 8/1/06

Rated by: Douglas, Burley Trained by Ecology? Yes____ No ✓ Date of training: —

SEC: 20 TWNSHP: 23N RNGE: 5E Is S/T/R in Appendix D? Yes____ No ✓

Map of wetland unit: Figure____ Estimated size 0.2 Acre

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I____ II____ III X IV____

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	18
Score for Hydrologic Functions	14
Score for Habitat Functions	12
TOTAL Score for Functions	44

Category based on SPECIAL CHARACTERISTCS of Wetland I____ II____ Does not apply ✓

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics	
Estuarine	
Natural Heritage Wetland	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above.	

Wetland HGM Class used for Rating	
Depressional	✓
Riverine	
Lake-fringe	
Slope	
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		✓

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number 2.7HL

Classification of Vegetated Wetlands for Western Washington

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

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   _____ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   _____ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   _____ The wetland is on a slope *(slope can be very gradual)*.
   _____ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   _____ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   _____ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   _____ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

Wetland name or number 2.78

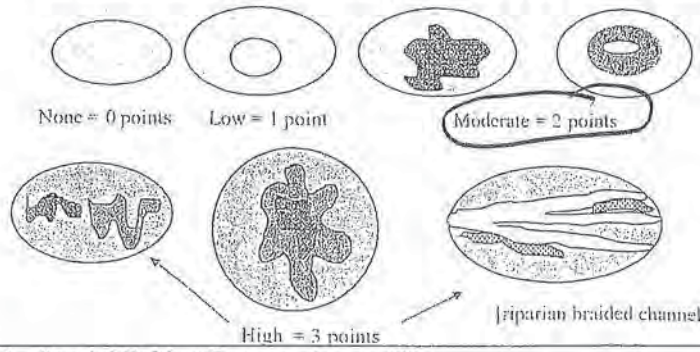
D	Depressional and Flat Wetlands	Points (only 1 score per box)
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	
D 1	**Does the wetland have the potential to improve water quality?** *(see p.38)*	
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) ..... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet ..... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) ..... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch ..... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	Figure ___ 2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) **YES** points = 4 **NO** points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area ..... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area ..... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area ..... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area ..... points = 0 **Map of Cowardin vegetation classes**	Figure ___ 3
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland ..... points = 4 • Area seasonally ponded is > 1/4 total area of wetland ..... points = 2 • Area seasonally ponded is < 1/4 total area of wetland ..... points = 0 **Map of Hydroperiods**	Figure ___ 4
	Total for D 1 *Add the points in the boxes above*	9
D 2	**Does the wetland have the opportunity to improve water quality?** *(see p. 44)* Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ___ Grazing in the wetland or within 150 ft __✓__ Untreated stormwater discharges to wetland ___ Tilled fields or orchards within 150 ft. of wetland ___ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging __✓__ Residential, urban areas, golf courses are within 150 ft. of wetland ___ Wetland is fed by groundwater high in phosphorus or nitrogen ___ Other _____ **YES** multiplier is 2 **NO** multiplier is 1	Multiplier 2
◆	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	18
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the potential to reduce flooding and erosion?** *(see p.46)*	
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) ..... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet ..... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch ..... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* ..... points = 0	2
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet ..... points = 7 • The wetland is a "headwater" wetland ..... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet ..... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet ..... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft ..... points = 0	5
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit ..... points = 5 • The area of the basin is 10 to 100 times the area of the unit ..... points = 3 • The area of the basin is more than 100 times the area of the unit ..... points = 0 • Entire unit is in the FLATS class ..... points = 5	0
	Total for D 3 *Add the points in the boxes above*	7
D 4	**Does the wetland have the opportunity to reduce flooding and erosion?** *(see p. 49)* Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from	Multiplier 2

Wetland name or number 2.76

	groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ___ Wetland is in a headwater of a river or stream that has flooding problems. __X__ Wetland drains to a river or stream that has flooding problems ___ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ___ Other _____ **YES** multiplier is 2 **NO** multiplier is 1	2
◆	**TOTAL – Hydrologic Functions** Multiply the score from D3 by D4; then *add score to table on p. 1*	14

Comments:

Wetland name or number 2.78

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.		Points (only 1 score per box)
H 1	**Does the wetland have the potential to provide habitat for many species?**	
	H 1.1 Vegetation structure *(see P. 72)*: *Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.* ✓ Aquatic Bed ✓ Emergent plants ✓ Scrub/shrub (areas where shrubs have > 30% cover) ___ Forested (areas where trees have > 30% cover) *If the unit has a forested class check if:* ___ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. *Add the number of vegetation types that qualify. If you have:* **Map of Cowardin vegetation classes** 4 structures or more.....points = 4 — 3 structures..... points = 2 2 structures.....points = 1 — 1 structure ..... points = 0	Figure ___ 1
	H 1.2 Hydroperiods *(see p.73)*: *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).* ___ Permanently flooded or inundated — 4 or more types present points = 3 ___ Seasonally flooded or inundated — 3 or more types present.....points = 2 ___ Occasionally flooded or inundated — 2 types present..... points = 1 ___ Saturated only — 1 type present ..... points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ **Lake-fringe wetland.....= 2 points** ___ **Freshwater tidal wetland.....= 2 points** **Map of hydroperiods**	Figure ___ 2
	H 1.3 Richness of Plant Species *(see p. 75)*: Count the number of plant species in the wetland that cover at least 10 ft² *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.* If you counted: > 19 species..... points = 2 5 – 19 species ..... points = 1 < 5 species..... points = 0 List species below if you want to:	1
	H 1.4 Interspersion of Habitats *(see p. 76)*: Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". **Use map of Cowardin classes.**	Figure ___ 2
	H 1.5 Special Habitat Features *(see p. 77)*: *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ✓ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) ___ Standing snags (diameter at the bottom > 4 inches) in the wetland ___ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) ___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ___ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ___ Invasive plants cover less than 25% of the wetland area in each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	1
	H 1 TOTAL Score – potential for providing habitat *Add the points in the column above*	7

Wetland name or number 2.78

H 2	**Does the wetland have the opportunity to provide habitat for many species?**	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use).. ..... **points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference ..... **points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference ..... **points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference ..... **points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference ..... **points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK ..... **points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK ..... **points = 2** ____ Heavy grazing in buffer ..... **points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) ..... **points = 0** ____ Buffer does not meet any of the criteria above ..... **points = 1** **Arial photo showing buffers**	**Figure ___** 2
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* **YES = 4 points** (go to H 2.3) **NO** = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? **YES = 2 points** (go to H 2.3) **NO** = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR • Within 1 mile of a lake greater than 20 acres? **YES** = 1 point **NO** = 0 points	Ø

Comments:

Wetland name or number 2.75

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82):
Which of the following priority habitats are within 330 ft. (100m) of the wetland? *NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.*

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

____ **Aspen Stands**: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)

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

____ **Old-growth forests**: (Old growth west of Cascade Crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings, with at least 20 trees/ha (8 trees/acre) > 81cm (32 in) dbh or > 200 years of age.

____ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade Crest.

____ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.

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

____ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages.

____ **Oregon white Oak**: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____ **Estuary/Estuary-like**: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons.

____ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has 3 or more priority habitats .= 4 points If wetland has 1 priority habit ...= 1 point
If wetland has 2 priority habitats .....= 3 points No habitats.....= 0 points
Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. (Nearby wetlands are addressed in question H 2.4).

0

H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)*

- There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..... points = 5
- The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ..... points = 5
- There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ..... points = 3
- The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile..... points = 3
- There is at least 1 wetland within 1/2 mile ..... points = 2
- There are no wetlands within 1/2 mile ..... points = 0

3

H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4* 7

TOTAL for H 1 from page 8 5

◆ **Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1*** 12

Comments:

Wetland name or number 2.72

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*

SC1 **Estuarine wetlands?** *(see p.86)*

Does the wetland unit meet the following criteria for Estuarine wetlands?

___ The dominant water regime is tidal,
___ Vegetated, and
___ With a salinity greater than 0.5 ppt.

YES = Go to SC 1.1 **NO** ✓

SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? **YES** = Category I **NO** = go to SC 1.2 — **Cat. 1**

SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? **YES** = Category I **NO** = Category II — **Cat. I**

___ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — **Cat. II**

___ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland

___ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. — **Dual Rating I/II**

SC2 **Natural Heritage Wetlands** *(see p. 87)*

Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.

SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)*

S/T/R information from Appendix D _____ or accessed from WNHP/DNR web site _____

YES ____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 **NO** _____

SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? — **Cat I**

YES = Category 1 **NO** ✓ not a Heritage Wetland

SC3 **Bogs** *(see p. 87)*

Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.***

1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? **YES** = go to question 3 **NO** = go to question 2
2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? **YES** = go to question 3 **NO** = is not a bog for purpose of rating
3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)?

   YES = Is a bog for purpose of rating **NO** = go to question 4

   NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.
4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)*? — **Cat. I**

   YES = Category I **NO** = Is not a bog for purpose of rating

Wetland name or number 278

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. **YES** = Category I **NO** = ✓ not a forested wetland with special characteristics	Cat. I
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* **YES** = Go to SC 5.1 **NO** ✓ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) **YES** = Category I **NO** = Category II	Cat. I Cat. II
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? **YES** = Go to SC 6.1 **NO** ✓ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? **YES** = Category II **NO** = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? **YES** = Category III	Cat. II Cat. III
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered **NO** for all types enter "Not Applicable" on p. 1	NA

Comments:

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual) 2.3)R

Project/Site: 405 TRIP Applicant/owner: WSDOT Investigator(s): Pursley, Douglas	Date: 9/28/06 County: King State: WA S/T/R: 20/23N/5E
Do normal circumstances exist on the site? ☑ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No Is the area a potential problem area? ☐ Yes ☑ No Explanation of atypical or problem area:	Community ID: Transect ID: Plot ID: #1 WET (Near Flag 4)

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
THPL	T	30	FAC	ATFI	H	20	FAC
ACRU	T	90	FAC	UGDI	H	20	FAC+
ILAQ	S	20	FACW	LYAM	H	20	OBL
RUSP	S	20	FAC+	PHAR	H	20	FACW
Sorbus sp.	S	10	FACU	PLAR2	H	20	FACW
RUBL	S	5	FACU	SODU	H	50	FAC+
				Piggyback - TOLOMEN H		10	FAC

T = 120/120 = 100%
S = 20/40 = 50%
H = 150/150 = 100%

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 290/310 = 94%

Check all indicators that apply and explain below:

- ☑ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☑ Wetland plant database
- ☑ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale for decision/Remarks: 94% Wet Dom Yes

HYDROLOGY

Is it the growing season? ☑ Yes ☐ No

Based on: ☐ Soil temp (record temp) ☑ Other (explain) September

Depth of inundation: 0 inches

Depth to free water in pit: 8"

Depth to saturated soil: @ surface

Water Marks: ☐ Yes ☑ No on	Sediment Deposits: ☐ Yes ☑ No
Drift Lines: ☐ Yes ☑ No	Drainage Patterns: ☑ Yes ☐ No
Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☑ No	Local Soil Survey: ☐ Yes ☑ No
FAC Neutral: ☐ Yes ☐ No	Water-stained Leaves: ☑ Yes ☐ No

Check all that apply & explain below:

- ☐ Stream, lake or gage data
- ☐ Aerial photographs
- ☐ Other

Other (explain):

Wetland hydrology present? ☑ Yes ☐ No

Rationale for decision/remarks:

SOILS

Map Unit Name (Series and Phase): Alderwood gravelly sandy loam 15 to 30% slopes

Drainage Class

Field observations confirm mapped type? ☐ Yes ☒ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-18"		10YR 3/1 to 3/1		—	Sandy loam	Sand concen. higher, deeper in pit

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☑ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☑ Yes ☐ No

Rationale for decision/Remarks: Low chroma

Wetland Determination

Hydrophytic vegetation present?	☑ Yes	☐ No
Hydric soils present?	☑ Yes	☐ No
Wetland hydrology present?	☑ Yes	☐ No
Is the sampling point within a wetland?	☑ Yes	☐ No

Rationale/Remarks: 3 of 3 parameters

NOTES:

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual) 2.9IR

Project/Site: 405 TRIP Applicant/owner: WSDOT Investigator(s): Pursley, Douglas	Date: 9/28/06 County: King State: WA S/T/R: 20/23N/5E
Do normal circumstances exist on the site? ☑ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No Is the area a potential problem area? ☐ Yes ☑ No Explanation of atypical or problem area:	Community ID: Transect ID: Plot ID: #2 UP (near flag 7)

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
COCO	T	40	FACU	POMU	H	60	FACU
ALRU	T	80	FAC	Ocean Spray HODI	S	10	UPL
ILAQ	T	20	FACU	Cherry, orn	S	30	FACU
RHODY	S	20	FAC-	Prunus Emar			
RUPR	S	30	FACU				
RUUR	S	10	FACU				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 80/280 = 28%

T = 80/140 = 57%
S = 0/80 = Ø
H = 0/60 = Ø

Check all indicators that apply and explain below:

- ☐ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☑ Wetland plant database
- ☑ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale for decision/Remarks: 28% Wet Veg Dom.

HYDROLOGY

Is it the growing season? ☑ Yes ☐ No	Water Marks: ☐ Yes ☑ No on	Sediment Deposits: ☐ Yes ☑ No
Based on: ☐ Soil temp (record temp) ☑ Other (explain) September	Drift Lines: ☐ Yes ☑ No	Drainage Patterns: ☐ Yes ☑ No
Depth of inundation: Ø inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☑ No	Local Soil Survey: ☐ Yes ☑ No
Depth to free water in pit: Ø to 18"	FAC Neutral: ☐ Yes ☑ No	Water-stained Leaves: ☐ Yes ☑ No
Depth to saturated soil: Ø to 18"		

Check all that apply & explain below:

- ☐ Stream, lake or gage data
- ☐ Aerial photographs
- ☐ Other

Other (explain):

Wetland hydrology present? ☐ Yes ☑ No

Rationale for decision/remarks: No Hydric Indicators

SOILS

Map Unit Name (Series and Phase): Alderwood gravelly sandy loam 15 to 30% Slopes

Drainage Class

Field observations confirm mapped type? ☐ Yes ☑ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-14		10YR 3/4		—	Loam	
14-18		10YR 4/4		—	Loam	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☐ Yes ☑ No

Rationale for decision/Remarks: No Hydric indicators, high chroma

Wetland Determination

Hydrophytic vegetation present?	☐ Yes	☑ No
Hydric soils present?	☐ Yes	☑ No
Wetland hydrology present?	☐ Yes	☑ No
Is the sampling point within a wetland?	☐ Yes	☑ No

Rationale/Remarks: 0 of 3 parameters

NOTES:

Revised 4/97

Wetland name or number 2.81R

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 2.81R Date of site visit: 9/28/06

Rated by: Douglas, Pursley Trained by Ecology? Yes ____ No ✓ Date of training: —

SEC: 20 TWNSHP: 23N RNGE: 5E Is S/T/R in Appendix D? Yes ____ No ✓

Map of wetland unit: Figure ____ Estimated size 0.3 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I ____ II ✓ III ____ IV ____

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	16
Score for Hydrologic Functions	26
Score for Habitat Functions	15
TOTAL Score for Functions	57

Category based on SPECIAL CHARACTERISTCS of Wetland I ____ II ____ Does not apply ____

Final Category (choose the "highest" category from above") II

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	
Natural Heritage Wetland		Riverine	✓
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above		Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		✓

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number 2.B162

Classification of Vegetated Wetlands for Western Washington

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

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   _____ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   _____ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   _____ The wetland is on a slope *(slope can be very gradual)*.
   _____ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   _____ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   _____ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   _____ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding.*.
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

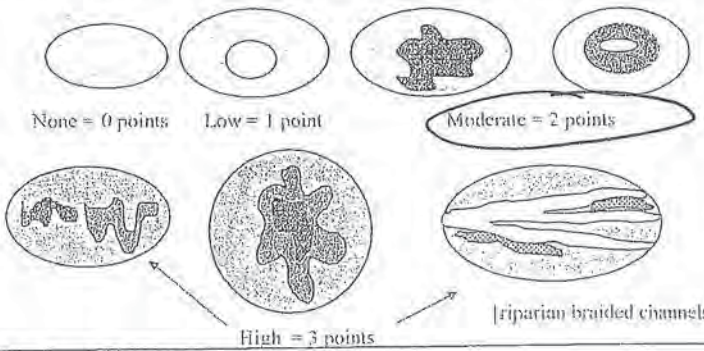
If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

Wetland name or number 2.81R

R	Riverine and Freshwater Tidal Fringe Wetlands	Points (only 1 score per box)
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	
R 1	**Does the wetland have the potential to improve water quality?** *(see p.52)*	
	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: • Depressions cover > 3/4 area of wetland ..... points = 8 • Depressions cover > 1/2 area of wetland ..... points = 4 **(If depressions > 1/2 of area of unit draw polygons on aerial photo or map)** • Depressions present but cover < 1/2 area of wetland. ..... points = 2 • No depressions present ..... points = 0	Figure ___ 2
	R 1.2 Characteristics of the vegetation in the unit (areas with >90% cover at person height): • Trees or shrubs > 2/3 area of the unit ..... points = 8 • Trees or shrubs > 1/3 area of the wetland ..... points = 6 • Ungrazed, herbaceous plants > 2/3 area of unit ..... points = 6 • Ungrazed herbaceous plants > 1/3 area of unit ..... points = 3 • Trees, shrubs, and ungrazed herbaceous < 1/3 area of unit ..... points = 0 **Aerial photo or map showing polygons of different vegetation types**	Figure ___ 6
	Add the points in the boxes above	8
R 2	**Does the wetland have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ___ Grazing in the wetland or within 150 ft X Untreated stormwater discharges to wetland ___ Tilled fields or orchards within 150 ft. of wetland X A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging X Residential, urban areas, golf courses are within 150 ft. of wetland X The river or stream linked to the wetland has a contributing basin where human activities have raised levels of sediment, toxic compounds or nutrients in the river water above standards for water quality. ___ Other _____ **YES** multiplier is 2 **NO** multiplier is 1	*(see p. 53)* Multiplier 2
◆	**TOTAL – Water Quality Functions** Multiply the score from R1 by R2; then *add score to table on p. 1*	16
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.	
R 3	**Does the wetland have the potential to reduce flooding and erosion?**	*(see p.54)*
	R 3.1 Characteristics of the overbank storage the wetland provides: *Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of unit) / (average width of stream between banks).* • If the ratio is more than 20 ..... points = 9 • If the ratio is between 10 – 20 ..... points = 6 • If the ratio is 5- <10 ..... points = 4 • If the ratio is 1- <5 ..... points = 2 • If the ratio is < 1 ..... points = 1 **Aerial photo or map showing average widths**	Figure ___ 6
	R 3.2 Characteristics of vegetation that slow down water velocities during floods: *Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description. (polygons need to have >90% cover at person height NOT Cowardin classes):* • Forest or shrub for > 1/3 area OR herbaceous plants > 2/3 area ..... points = 7 • Forest or shrub for > 1/10 area OR herbaceous plants > 1/3 area ..... points = 4 • Vegetation does not meet above criteria ..... points = 0 **Aerial photo or map showing polygons of different vegetation types**	Figure ___ 7
	Add the points in the boxes above	13
R 4	**Does the wetland have the opportunity to reduce flooding and erosion?** Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. *Note which of the following conditions apply.* X There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding. ___ There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding ___ Other _____ *(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike)* **YES** multiplier is 2 **NO** multiplier is 1	*(see p.57)* Multiplier 2
◆	**TOTAL – Hydrologic Functions** Multiply the score from R3 by R4; then *add score to table on p. 1*	26

Comments:

Wetland name or number 2.318

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.	Points (only 1 score per box)
H 1 Does the wetland have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see P. 72)*: *Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.* ___ Aquatic Bed __X__ Emergent plants __X__ Scrub/shrub (areas where shrubs have > 30% cover) ___ Forested (areas where trees have > 30% cover) *If the unit has a forested class check if:* ___ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. *Add the number of vegetation types that qualify. If you have:* 4 structures or more.....points = 4 2 structures.....points = 1 **Map of Cowardin vegetation classes** 3 structures..... points = 2 1 structure ..... points = 0	Figure 1 1
H 1.2 Hydroperiods *(see p.73)*: *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).* ___ Permanently flooded or inundated __X__ Seasonally flooded or inundated ___ Occasionally flooded or inundated __X__ Saturated only __X__ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ **Lake-fringe wetland.....= 2 points** ___ **Freshwater tidal wetland.....= 2 points** 4 or more types present points = 3 3 or more types present.....points = 2 2 types present..... points = 1 1 type present ..... points = 0 **Map of hydroperiods**	Figure ___ 2
H 1.3 Richness of Plant Species *(see p. 75)*: Count the number of plant species in the wetland that cover at least 10 ft² *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.* If you counted: > 19 species..... points = 2 5 – 19 species .....points = 1 < 5 species..... points = 0 List species below if you want to: _____ _____ _____ _____	1
H 1.4 Interspersion of Habitats *(see p. 76)*: Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". **Use map of Cowardin classes.**	Figure ___ 2
H 1.5 Special Habitat Features *(see p. 77)*: *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* __X__ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) __X__ Standing snags (diameter at the bottom > 4 inches) in the wetland ___ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) ___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ___ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* __X__ Invasive plants cover less than 25% of the wetland area in each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	3
H 1 TOTAL Score – potential for providing habitat *Add the points in the column above*	9

Wetland name or number 2,3R

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use).. ..... **points = 5** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference ..... **points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference ..... **points = 4** X 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference ..... **points = 3** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference ..... **points = 3** **If buffer does not meet any of the criteria above:** ___ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK ..... **points = 2** ___ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK ..... **points = 2** ___ Heavy grazing in buffer ..... **points = 1** ___ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) ..... **points = 0** ___ Buffer does not meet any of the criteria above ..... **points = 1** **Arial photo showing buffers**	**Figure** ___ 3
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* **YES = 4 points** (go to H 2.3) **NO** = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? **YES = 2 points** (go to H 2.3) **NO** = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR • Within 1 mile of a lake greater than 20 acres? ~~**YES = 1 point**~~ **NO** = 0 points	Ø

Comments:

Wetland name or number A-B10C

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82):
Which of the following priority habitats are within 330 ft. (100m) of the wetland? *NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.*

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

____ **Aspen Stands**: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)

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

____ **Old-growth forests**: (Old growth west of Cascade Crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings, with at least 20 trees/ha (8 trees/acre) > 81cm (32 in) dbh or > 200 years of age.

____ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade Crest.

____ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.

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

____ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages.

____ **Oregon white Oak**: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____ **Estuary/Estuary-like**: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons.

____ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has 3 or more priority habitats .= 4 points If wetland has 1 priority habit ...= 1 point
If wetland has 2 priority habitats .....= 3 points No habitats.....(= 0 points)
Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. (Nearby wetlands are addressed in question H 2.4).

0

H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)*

- There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development.....points = 5
- The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile .....points = 5
- There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed.....(points = 3)
- The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile.....points = 3
- There is at least 1 wetland within 1/2 mile.....points = 2
- There are no wetlands within 1/2 mile .....points = 0

3

	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	6
	TOTAL for H 1 from page 8	9
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1***	15

Comments:

Wetland name or number 2.8/2

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ___ The dominant water regime is tidal, ___ Vegetated, and ___ With a salinity greater than 0.5 ppt. **YES** = Go to SC 1.1 **NO** ___	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? **YES** = Category I **NO** = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? **YES** = Category I **NO** = Category II ___ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ___ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ___ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D _____ or accessed from WNHP/DNR web site _____ **YES** ___ Contact WNHP/DNR (see p. 79) and go to SC 2.2 **NO** _____ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? **YES** = Category 1 **NO** ___ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? **YES** = go to question 3 **NO** = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? **YES** = go to question 3 **NO** = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? **YES** = Is a bog for purpose of rating **NO** = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)*? **YES** = Category I **NO** = Is not a bog for purpose of rating	**Cat. I**

Wetland name or number 2.318

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. **YES** = Category I **NO** = ____ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* **YES** = Go to SC 5.1 **NO** ____ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) **YES** = Category I **NO** = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? **YES** = Go to SC 6.1 **NO** ____ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? **YES** = Category II **NO** = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? **YES** = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered **NO** for all types enter "Not Applicable" on p. 1	NA

Comments:

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT 405 Project S. Renton	Date: 2/11/05
Applicant/owner: WSDOT	County: King
Investigator(s): AM, KK, JC	State: WA
	S/T/R: 20/23N/5E
Do Normal Circumstances exist on the site? (yes) no	Community ID: upland
Is the site significantly disturbed (atypical situation)? yes (no)	Transect ID:
Is the area a potential Problem Area? yes (no)	Plot ID: DP 2,3LC-A
Explanation of atypical or problem area:	

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Rubus discolor	S	65	FACU				
Phalaris arundinacea	H	10	FACW				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 0

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	____	Physiological/reproductive adaptations	____
		Wetland plant database	X
Morphological adaptations	____	Personal knowledge of regional plant communities	____
Technical Literature	____	Other (explain)	____

Hydrophytic vegetation present? yes (no)
Rationale for decision/Remarks:
Dominant plant is FACU

HYDROLOGY

Is it the growing season? yes (no)

Based on: ____ soil temp (record temp ____)
time of year other (explain)

Dept. of inundation:	— inches	Water Marks: yes (no) on ____	Sediment Deposits: yes (no)
		Drift Lines: yes (no)	Drainage Patterns: yes (no)
Depth to free water in pit:	— inches	Oxidized Root (live roots) Channels <12 in. yes (no)	Local Soil Survey: yes (no)
Depth to saturated soil:	— inches	FAC Neutral: yes no	Water-stained Leaves yes (no)

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? yes (no)
Rationale for decision/Remarks:
Some moist soils observed at surface, but sub-soil layer is dry.

SOILS

Map Unit Name (Series & Phase) Urban land

Drainage Class variable

Field observations confirm mapped type? Yes (No)

Taxonomy (subgroup) NA

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-9	A	10YR 3/2			loam	
9-16+	B	10YR 4/3	7.5YR 4/6	many, distinct, fine	Sandy loam	
dominant	chunks of	5Y 5/2	7.5YR 4/6	many, distinct fine	Clay loam	
	&	7.5YR 4/6			loamy sand	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma (=1) matrix
- ____ Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:

Low-chroma matrix w/ mottles observed.

Wetland Determination (circle)

Hydrophytic vegetation present? yes (no)

Hydric soils present? (yes) no

Wetland hydrology present? yes (no)

Is the sampling point within a wetland? yes (no)

Rationale/Remarks:

2 wetland criteria not met.

NOTES:

DP A is located north of wetland 2.81 L, in large RUDI-dominated area. Soils are disturbed.

Revised 4/97

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT 405 Project S. Renton	Date: 2/11/05
Applicant/owner: WSDOT	County: Kits
Investigator(s): AM, JL	State: WA S/T/R: 20/23N/5E
Do Normal Circumstances exist on the site? (yes) no Is the site significantly disturbed (atypical situation)? yes (no) Is the area a potential Problem Area? yes (no) Explanation of atypical or problem area:	Community ID: Off wetland Transect ID: Plot ID: 2.81L-B

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Phalaris arundinacea	H	100	FACW				
Rubus discolor	S	15	FAC				
→ rooted outside of wetland							

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	X	Physiological/reproductive adaptations	
Morphological adaptations		Wetland plant database	X
Technical Literature		Personal knowledge of regional plant communities	
		Other (explain)	

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
Dominant plant is FACW.

HYDROLOGY

Is it the growing season? yes (no)

Based on: _____ soil temp (record temp _____)
time of year other (explain)

Dept. of inundation:	— inches	Water Marks: yes (no) on _____	Sediment Deposits: yes (no)
Depth to free water in pit:	9 inches	Drift Lines: yes (no)	Drainage Patterns: yes (no)
Depth to saturated soil:	Surface inches	Oxidized Root (live roots) Channels <12 in. yes (no)	Local Soil Survey: yes (no)
		FAC Neutral: yes no	Water-stained Leaves yes (no)

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? (yes) no
Rationale for decision/Remarks:
Soil saturated to surface, free water observed at 9 - inches depth in soil pit.

SOILS

Map Unit Name (Series & Phase) Urban land

Drainage Class Variable

Taxonomy (subgroup) NA

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-10	A	10YR 3/2	—	—	Silt loam & Organics	
10-16+	B	10YR 4/2	10YR 4/6	Common, medium, distinct	Sandy loam	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma (=1) matrix
- ✓ Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:

Matrix chroma of 2 w/ mottles observed at 10" - depth.

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no			
Hydric soils present?	(yes)	no	Is the sampling point within a wetland?	(yes)	no
Wetland hydrology present?	(yes)	no			

Rationale/Remarks:

All 3 wetland criteria met.

NOTES:

DP B is located in wetland J. 81 L. Wetland is a small PEMA-dominated depression, surrounded by RUDS. Wetland is located east of Benson/S Renton Village Place intersection. The wetland is hydrologically isolated, receives water from runoff, and maybe seep (?) Wetland is PEM

Revised 4/97

DRAFT WETLAND RATING FORM – WESTERN WASHINGTON

Name of wetland (if known): 2.81L

Location: SEC: 20 TWNSHP: 23N RNGE: 5E (attach map with outline of wetland to rating form)

Person(s) Rating Wetland: A. Merrill Affiliation: WSDOT 405 Project & Renton Date of site visit: 2/1/05

DRAFT SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___ IV X

Category I = Score >70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	10
Score for Hydrologic Functions	4
Score for Habitat Functions	8
TOTAL score for functions	22

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ **Does not Apply** X

Final Category (choose the "highest" category from above) IV

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X		

Does the wetland being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
SP1. *Has the wetland been documented as a habitat for any Federally listed Threatened or Endangered plant or animal species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland been documented as habitat for any State listed Threatened or Endangered plant or animal species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database.		X
SP3. *Does the wetland contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

Wetland Name: _____ **Date:** _____

1. Are the water levels in the wetland usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES – the wetland class is Tidal Fringe**

   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

   If your wetland can be classified as a Freshwater Tidal Fringe use the forms for Riverine wetlands. If it is Saltwater Tidal Fringe it is rated as an Estuarine wetland. Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. Is the topography within the wetland flat and precipitation is only source (>90%) of water to it.
   NO – go to 3 **YES – The wetland class is Flats**

   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the wetland **meet both** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) where at least 20 acres (8 ha) are permanently inundated (ponded or flooded);
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
   NO – go to 4 **YES – The wetland class is Lake-fringe (Lacustrine Fringe)**

4. Does the wetland **meet all** of the following criteria?
   ____The wetland is on a slope (*slope can be very gradual*),
   ____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ____The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks(depressions are usually <3ft diameter and less than 1 foot deep).*
   NO - go to 5 **YES – The wetland class is Slope**

5. Is the wetland in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river? The flooding should occur at least once every two years, on the average, to answer "yes." *The wetland can contain depressions that are filled with water when the river is not flooding.*
   NO - go to 6 **YES – The wetland class is Riverine**

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

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

7. Is the wetland located in a very flat area with no obvious depression and no stream or river running through it and providing water. The wetland seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

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

8. Your wetland seems to be difficult to classify. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. Sometimes we find characteristics of several different hydrogeomorphic classes within one wetland boundary. Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland being rated. If the area of the second class is less than 10% classify the wetland using the first class.

HGM Classes Within a Delineated Wetland Boundary	*Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

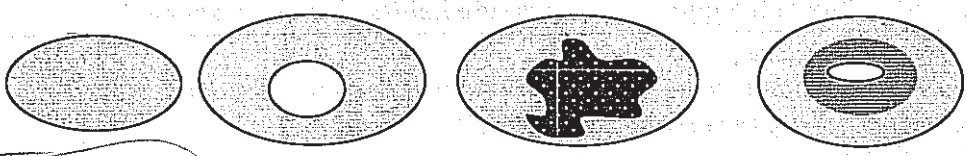
D	Depressional and Flats Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
D	**D 1. Does the wetland have the potential to improve water quality?** *(see p. 38)* X	
D	D 1.1 Characteristics of surface water flows out of the wetland: Wetland is a depression with no surface water outlet — points = 3 Wetland has an intermittently flowing, or highly constricted, outlet — points = 2 Wetland has an unconstricted surface outlet — points = 1 Wetland is flat and has no obvious outlet and/or outlet is a ditch — points = 1	2
D	D 1.2 The soil 2 inches below the surface is clay, organic, or smells anoxic (hydrogen sulfide or rotten eggs). YES — points = 4 NO — points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest class): Wetland has persistent, ungrazed, vegetation > = 95% of area — points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area — points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area — points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area — points = 0	3
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland — points = 4 Area seasonally ponded is > ¼ total area of wetland — points = 2 Area seasonally ponded is < ¼ total area of wetland — points = 0 NOTE: *See text for indicators of seasonal and permanent inundation..*	0
D	**Total for D 1** *Add the points in the boxes above*	5
D	**D 2. Does the wetland have the opportunity to improve water quality?** *(see p. 44)* Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants.* — Grazing in the wetland or within 150 ft + Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other _____ YES multiplier is 2 **NO** multiplier is 1	multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 *Add score to table on p. 1*	10

D	Depressional and Flats Wetlands	Points
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation	
	D 3. Does the wetland have the <u>potential</u> to reduce flooding and erosion? *(see p. 46)*	
D	D 3.1 Characteristics of surface water flows out of the wetland Wetland has no surface water outlet points = 4 Wetland has an intermittently flowing, or highly constricted, outlet (points = 2) Wetland is flat and has no obvious outlet and/or outlet is a small ditch points = 1 Wetland has an unconstricted surface outlet points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet* Marks of ponding are 3 ft or more above the surface points = 7 The wetland is a "headwater" wetland" points = 5 Marks of ponding between 2 ft to < 3 ft from surface points = 5 Marks are at least 0.5 ft to < 2 ft from surface points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (points = 0)	0
D	D 3.3 Contribution of wetland to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland itself.* The area of the basin is less than 10 times the area of wetland points = 5 The area of the basin is 10 to 100 times the area of the wetland points = 3 The area of the basin is more than 100 times the area of the wetland (points = 0) Wetland is in the FLATS class (basin = the wetland, by definition) points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	2
D	**D 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** *(see p. 49)* Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems 4 Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ (YES) multiplier is 2 NO multiplier is 1	multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	4

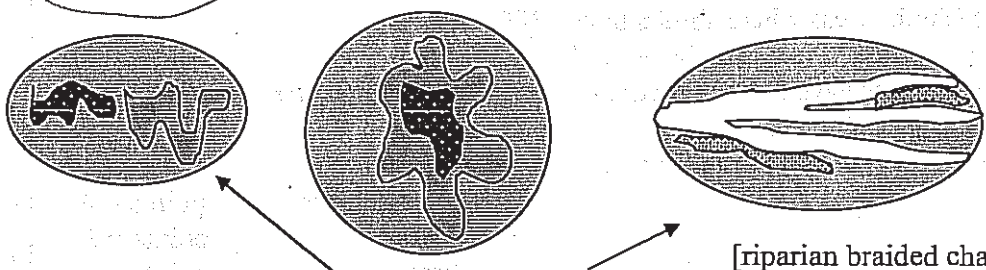
These questions apply to wetlands of all HGM classes.	Points
HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat	
H 1. Does the wetland have the <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin) if the class covers more than 10% of the area of the wetland or ¼ acre.* ____Aquatic bed __X__Emergent plants ____Scrub/shrub (areas where shrubs have >30% cover) ____Forested (areas where trees have >30% cover) ____Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) *Add the number of vegetation types that qualify. If you have:* 4 types or more points = 4 3 types points = 2 2 types points = 1 1 type points = 0	0
H 1.2. <u>Hydroperiods</u> *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated __X__Seasonally flooded or inundated ____Occasionally flooded or inundated __X__Saturated only ____Permanently flowing stream or river in, or adjacent to, the wetland ____Seasonally flowing stream in, or adjacent to, the wetland ____***Lake-fringe wetland* = 2 points** ____***Freshwater tidal wetland* = 2 points** 4 or more types present points = 3 3 types present points = 2 2 types present point = 1	1
H 1.3. <u>Richness of Plant Species</u> *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* *List species below if you want to:* If you counted: > 19 species points = 2 5 - 19 species points = 1 < 5 species points = 0	0

H 1.4. Interspersion of habitats *(see p. 76)*

Decided from the diagrams below whether interspersion between types of vegetation (described in H 1.1), or vegetation types and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



None = 0 points Low = 1 point Moderate = 2 points



[riparian braided channels]

High = 3 points

NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".

0

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

____Standing snags (diameter at the bottom > 4 inches) in the wetland

____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m)

____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present

____At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*

____Invasive plants cover less than 25% of the wetland area in each stratum of plants

0

H 1. TOTAL Score - potential for providing habitat
Add the scores in the column above

1

Comments

H 2. Does the wetland have the opportunity to provide habitat for many species?

H 2.1 Buffers *(see p. 80)*

Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. **(relatively undisturbed also means no-grazing)** **Points = 5**

— 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4**

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3**

If buffer does not meet any of the three criteria above

— No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— Heavy grazing in buffer. **Points = 1**

— Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.**

— Buffer does not meet any of the criteria above. **Points = 1**

3

H 2.2 Corridors and Connections *(see p. 81)*

H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*).

YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2

H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above?

YES = **2 points** (*go to H 2.3*) NO = H 2.2.3

H 2.2.3 Is the wetland:

within 5 mi (8km) of a brackish or salt water estuary OR
within 3 mi of a large field or pasture (>40 acres) OR
within 1 mi of a lake greater than 20 acres?

YES = **1 point** NO = **0 points**

0

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)*

Which of the following priority habitats are within 330ft (100m) of the wetland?
(see text for a more detailed description of these priority habitats)

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

____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

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

____**Old-growth forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age.

____**Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____**Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.

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

____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages

____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____**Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____**Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5% during the period of average annual low flow. Includes both estuaries and lagoons.

____**Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** No habitats = 0 points

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	2
H 2. TOTAL Score - opportunity for providing habitat *Add the scores in the column above*	7
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	8

Routine Wetland Determination

Wes 2,82R

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: 405 TRSP
Applicant/owner: WSDOT
Investigator(s): Douglas, Pursley

Date: 2/21/07
County: King
State: WA
S/T/R: 23/23N/5E

Do normal circumstances exist on the site? ☑ Yes ☐ No
Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No
Is the area a potential problem area? ☐ Yes ☑ No
Explanation of atypical or problem area:

Community ID: —
Transect ID: —
Plot ID: SP #1 (W)

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
ALNORU	T	30	FAC				
RUBARM	S	50	FACW				
PHAAR	H	40	FACW				
ATHFEL	H	30	FAC				

HYDROPHYTIC VEGETATION INDICATORS: T=30/30=100%, S=0/50=0%, H=70/70=100%

% of dominants OBL, FACW, & FAC: 100/150 = 67%

Check all indicators that apply and explain below:

- ☑ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☑ Wetland plant database
- ☑ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale for decision/Remarks: 67% Dom. WES. VEG.

HYDROLOGY

Is it the growing season? ☐ Yes ☑ No

Based on: ☐ Soil temp (record temp) ☑ Other (explain) Following

Depth of inundation: 0 inches

Depth to free water in pit: @ 14"

Depth to saturated soil: @ surface

Water Marks: ☐ Yes ☑ No

Sediment Deposits: ☐ Yes ☑ No

Drift Lines: ☐ Yes ☑ No

Drainage Patterns: ☑ Yes ☐ No

Oxidized Root (live roots) Channels <12in.: ☐ Yes ☑ No

Local Soil Survey: ☐ Yes ☑ No

FAC Neutral: ☑ Yes ☐ No

Water-stained Leaves: ☑ Yes ☐ No

Check all that apply & explain below:

- ☐ Stream, lake or gage data
- ☐ Aerial photographs
- ☐ Other

Other (explain):

Wetland hydrology present? ☑ Yes ☐ No

Rationale for decision/remarks: Soil saturation and free water in pit.

SOILS

Map Unit Name (Series and Phase): Beausite gravelly sandy loam, 15 to 30% slopes

Drainage Class

Field observations confirm mapped type? ☐ Yes ☑ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-6"		10YR 3/1	—	—	Silt loam	
6-16"		10YR 3/1	5Y 3/1	m, m, P	Sandy Loam	
16-18"+		10YR 6/6	—	—	Loamy sand	
16-18"+		10YR 6/4	—	—	"	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☑ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma (=1) matrix
- ☑ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☑ Yes ☐ No

Rationale for decision/Remarks:

Wetland Determination

Hydrophytic vegetation present?	☑ Yes	☐ No
Hydric soils present?	☑ Yes	☐ No
Wetland hydrology present?	☑ Yes	☐ No
Is the sampling point within a wetland?	☑ Yes	☐ No

Rationale/Remarks: 3 of 3 parameters

NOTES: 10:00, clear sky, cool - mid 40's

Narrow, linear shape between TOS and abandoned road.

Connects 2 wetlands identified as separate under the Nickel project.

Revised 4/97

Routine Wetland Determination

DATA FORM 1 *(Revised)* Wetland 2.82R

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: 405 TRIP Applicant/owner: WSDOT Investigator(s): Douglas, Forster	Date: 2/21/07 County: King State: WA S/T/R: 20/23N/5E
Do normal circumstances exist on the site? ☑ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No Is the area a potential problem area? ☐ Yes ☑ No Explanation of atypical or problem area:	Community ID: — Transect ID: — Plot ID: SP #2 (UP)

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
ACEMAC	T	80	FACU				
OEMCER	S	60	FACU				
ALNRUB	T	20	FAC				
RUBARM	S	30	FACU				
ILEAQU	S	5	NPL				
PHAARU	H	20	FACW				

HYDROPHYTIC VEGETATION INDICATORS: T = 20/100 = 20%, S = 0/90 = 0%, H = 20/20 = 100%

% of dominants OBL, FACW, & FAC: 40/210 = 19%

Check all indicators that apply and explain below:

- ☐ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☑ Wetland plant database
- ☑ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale for decision/Remarks: 19% Dom. FAC. UPG.

HYDROLOGY

Is it the growing season? ☐ Yes ☑ No	Water Marks: ☐ Yes ☑ No on	Sediment Deposits: ☐ Yes ☑ No
Based on: ☐ Soil temp (record temp) ☑ Other (explain) February	Drift Lines: ☐ Yes ☑ No	Drainage Patterns: ☐ Yes ☑ No
Depth of inundation: 0 inches Depth to free water in pit: 0 Depth to saturated soil: 0	Oxidized Root (live roots) Channels <12in.: ☐ Yes ☑ No FAC Neutral: ☐ Yes ☑ No	Local Soil Survey: ☐ Yes ☑ No Water-stained Leaves: ☐ Yes ☑ No
Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):	

Wetland hydrology present? ☐ Yes ☑ No

Rationale for decision/remarks: No Hydric features

SOILS

Map Unit Name (Series and Phase): Beausite gravelly sandy loam, 15 to 30% slopes — Drainage Class

Field observations confirm mapped type? ☐ Yes ☑ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-5"		10YR 3/4	—	—	Sandy loam	
5-10"		10YR 6/5	—	—	Loamy sand	
5-10"		7.5YR 6/5	—	—	" "	
10-13"		10YR 4/4	7.5YR 3/5		L.S.	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☐ Yes ☑ No

Rationale for decision/Remarks: No hydric features, probably fill soils

Wetland Determination

Hydrophytic vegetation present?	☐ Yes	☑ No
Hydric soils present?	☐ Yes	☑ No
Wetland hydrology present?	☐ Yes	☑ No
Is the sampling point within a wetland?	☐ Yes	☑ No

Rationale/Remarks: 0 of 3 parameters

NOTES: 10:45, clear sky, cool, mid 40s

Revised 4/97

Routine Wetland Determination

Wetland 2.92R

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: 405 TREP Applicant/owner: WSDOT Investigator(s): Douglas, Pursley	Date: 2/21/07 County: King State: WA S/T/R: 20/23N/5E
Do normal circumstances exist on the site? ☑ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No Is the area a potential problem area? ☐ Yes ☑ No Explanation of atypical or problem area:	Community ID: — Transect ID: — Plot ID: SP#3 (W)

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
ALNRUB	T	20	FAC	— dead/dying			
SALSCO	T	30	FAC				
RUBARM	S	100	FACU				

HYDROPHYTIC VEGETATION INDICATORS: T = 50/50 = 100%, S = 0/100 = 0%

% of dominants OBL, FACW, & FAC: = 50/150 = 33%

Check all indicators that apply and explain below:

- ☐ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☑ Wetland plant database
- ☑ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☑ No Himalayan blackberry dominant encroaching into wetland.

Rationale for decision/Remarks: 33% Dom. FAC VEG.

HYDROLOGY

Is it the growing season? ☐ Yes ☑ No	Water Marks: ☐ Yes ☑ No on	Sediment Deposits: ☐ Yes ☑ No
Based on: ☐ Soil temp (record temp) ☑ Other (explain) February	Drift Lines: ☐ Yes ☑ No	Drainage Patterns: ☑ Yes ☐ No
Depth of inundation: Ø inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☑ No	Local Soil Survey: ☐ Yes ☑ No
Depth to free water in pit: 6"	FAC Neutral: ☐ Yes ☑ No	Water-stained Leaves: ☑ Yes ☐ No
Depth to saturated soil: @ surface		
Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):	

Wetland hydrology present? ☑ Yes ☐ No

Rationale for decision/remarks: Saturation & Standing Water

SOILS

Map Unit Name (Series and Phase): Beausite gravelly sandy loam

Drainage Class

Field observations confirm mapped type? ☐ Yes ☑ No

Taxonomy (subgroup) 15 to 30% slopes

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-7"		10YR 4/1	10YR 5/6	C, m, D	Sandy loam	
7-18"		10YR 5/1	10YR 5/6	C, m, D	loamy sand	
7-18"			10YR 5/8	C, m, D	Loamy sand	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma (=1) matrix
- ☑ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☑ Yes ☐ No

Rationale for decision/Remarks: Low chroma & mottles.

Wetland Determination

Hydrophytic vegetation present?	☐ Yes	☑ No
Hydric soils present?	☑ Yes	☐ No
Wetland hydrology present?	☑ Yes	☐ No
Is the sampling point within a wetland?	☑ Yes	☐ No

Rationale/Remarks: 2 of 3 parameters

NOTES: 11:30, Clear Sky, upper 40's
RUBARM Domin., Clearly Hydric Soils & Hydrology.

Revised 4/97

Routine Wetland Determination Wetland 2,82A

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: 405 TRIP
Applicant/owner: WSDOT
Investigator(s): Douglas, Purley

Date: 2/27/07
County: King
State: WA
S/T/R: 20/23N/5E

Do normal circumstances exist on the site? ☑ Yes ☐ No
Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No
Is the area a potential problem area? ☐ Yes ☑ No
Explanation of atypical or problem area:

Community ID: —
Transect ID: —
Plot ID: SP 4(W)

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
POPTRI	T	20	FAC				
ACEMAC	T	40	FACW	- noted outside wet.			
RUBARM	S	30	FACW				
PHAARU	H	100	FACW				

HYDROPHYTIC VEGETATION INDICATORS: T = 20/60 = 33%, S = 0/30 = 0%,
% of dominants OBL, FACW, & FAC: = 120/190 = 63% H = 100/100 = 100%

Check all indicators that apply and explain below:

- ☐ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☑ Wetland plant database
- ☑ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☑ Yes ☐ No
Rationale for decision/Remarks: 63% Dom. FAC. VEG.

HYDROLOGY

Is it the growing season? ☐ Yes ☑ No
Based on: ☐ Soil temp (record temp) ☑ Other (explain) February

Depth of inundation: 0 inches
Depth to free water in pit: 3"
Depth to saturated soil: @ surface

Water Marks: ☐ Yes ☑ No on
Drift Lines: ☐ Yes ☑ No
Oxidized Root (live roots) Channels <12in.: ☐ Yes ☑ No
FAC Neutral: ☑ Yes ☐ No

Sediment Deposits: ☐ Yes ☑ No
Drainage Patterns: ☑ Yes ☐ No
Local Soil Survey: ☐ Yes ☑ No
Water-stained Leaves: ☑ Yes ☐ No

Check all that apply & explain below:

- ☐ Stream, lake or gage data
- ☐ Aerial photographs
- ☐ Other

Other (explain):

Wetland hydrology present? ☑ Yes ☐ No
Rationale for decision/remarks: Saturation and standing water

SOILS

Map Unit Name (Series and Phase): Beausite gravelly sandy loam — Drainage Class

Field observations confirm mapped type? ☐ Yes ☒ No

Taxonomy (subgroup) 15 to 30% slopes

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-2"		10YR 2/3	—	—	Sandy Loam	
2-9"		10YR 4/1	10YR 6/4	C, M, D	Loamy Sand	
9-19"		10YR 2/5	10YR 6/4	C, M, D	Loamy Sand	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma (=1) matrix
- ☒ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☒ Yes ☐ No

Rationale for decision/Remarks: Low chroma, Mottles

Wetland Determination

Hydrophytic vegetation present?	☒ Yes	☐ No
Hydric soils present?	☒ Yes	☐ No
Wetland hydrology present?	☒ Yes	☐ No
Is the sampling point within a wetland?	☒ Yes	☐ No

Rationale/Remarks:

NOTES: 13:00, clear sky, Low 50s
middle section identified as upland in Nickel
28 total flags

Revised 4/97

Routine Wetland Determination

Wetland 2.82R

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: 405 TRIP Applicant/owner: WSDOT Investigator(s): Douglas, Pursley	Date: 2/21/07 County: King State: WA S/T/R: 20/23N/5E
Do normal circumstances exist on the site? ☑ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No Is the area a potential problem area? ☐ Yes ☑ No Explanation of atypical or problem area:	Community ID: — Transect ID: — Plot ID: SP#5 (up)

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
ACER MAC	T	80	FACU				
RUB ARM	S	40	FACU				
OEC CER	S	30	FACU				
SYM ALB	S	20	FACU				
POPTRI	T	5	FAC				
ACER CIR	S	20	FAC-				

HYDROPHYTIC VEGETATION INDICATORS: T = 0/80 = 0%, S = 0/110 = 0%

% of dominants OBL, FACW, & FAC: 0/190 = 0%

Check all indicators that apply and explain below:

- ☐ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☑ Wetland plant database
- ☑ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale for decision/Remarks: 0% Dom. FAC VEG.

HYDROLOGY

Is it the growing season? ☐ Yes ☑ No

Based on: ☐ Soil temp (record temp) ☑ Other (explain) February

Depth of inundation: 0 inches

Depth to free water in pit: 0

Depth to saturated soil: 0 to 18"

Water Marks: ☐ Yes ☑ No on	Sediment Deposits: ☐ Yes ☑ No	
Drift Lines: ☐ Yes ☑ No	Drainage Patterns: ☐ Yes ☑ No	
Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☑ No	Local Soil Survey: ☐ Yes ☑ No	
FAC Neutral: ☐ Yes ☑ No	Water-stained Leaves: ☐ Yes ☑ No	

Check all that apply & explain below:

- ☐ Stream, lake or gage data
- ☐ Aerial photographs
- ☐ Other

Other (explain):

Wetland hydrology present? ☐ Yes ☑ No

Rationale for decision/remarks: No hydric features

SOILS

Map Unit Name (Series and Phase): Beaufite gravelly sandy loam — Drainage Class

Field observations confirm mapped type? ☐ Yes ☑ No

Taxonomy (subgroup) 15 to 30% slopes

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-9		10YR 3/3	—	—	Loam	
9-18		10YR 3/3	—	—	Loam	
9-18		10YR 6/5	—	—	Loam	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☐ Yes ☑ No

Rationale for decision/Remarks: No hydric feature

Wetland Determination

Hydrophytic vegetation present?	☐ Yes	☑ No
Hydric soils present?	☐ Yes	☑ No
Wetland hydrology present?	☐ Yes	☑ No
Is the sampling point within a wetland?	☐ Yes	☑ No

Rationale/Remarks: 0 of 3 parameters

NOTES: 12:45, clear sky, dry - soil

Revised 4/97

Wetland name or number 2.92R

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 2.92R Date of site visit: 2/21/07

Rated by: Douglas, Ousley Trained by Ecology? Yes____ No ✓ Date of training: —

SEC: 20 TWNSHP: 23N RNGE: 5E Is S/T/R in Appendix D? Yes____ No ✓

Map of wetland unit: Figure_____ **Estimated size**_____

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I_____ **II**_____ **III**_____ **IV**_____

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	2
Score for Hydrologic Functions	6
Score for Habitat Functions	13
TOTAL Score for Functions	21

Category based on SPECIAL CHARACTERISTCS of Wetland I_____ **II**_____ **Does not apply** ✓

Final Category (choose the "highest" category from above") IV

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics	
Estuarine	
Natural Heritage Wetland	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	

Wetland HGM Class used for Rating	
Depressional	
Riverine	
Lake-fringe	
Slope	✓
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		✓

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number 2.82R

Classification of Vegetated Wetlands for Western Washington

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

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   _____ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   _____ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   ✓ The wetland is on a slope *(slope can be very gradual)*.
   ✓ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ✓ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   _____ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   _____ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

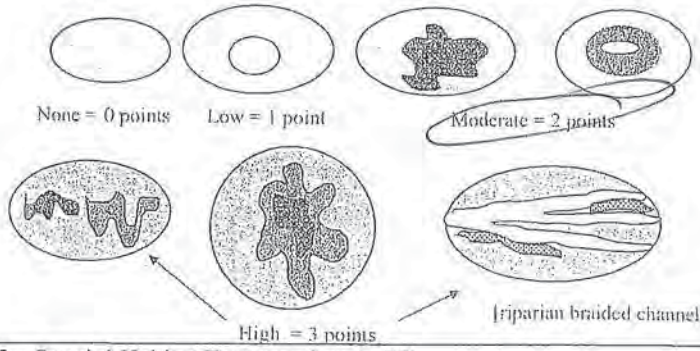
If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

Wetland name or number 2.32R

S	Slope Wetlands	Points (only 1 score per box) (see p.64)
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	
S 1	**Does the wetland have the potential to improve water quality?**	
	S 1.1 Characteristics of average slope of unit: • Slope is 1% or less *(a 1% slope has a 1 ft. vertical drop in elevation for every 100 ft. horizontal distance)*..... points = 3 • Slope is 1% - 2%..... points = 2 • Slope is 2% - 5%..... points = 1 • Slope is greater than 5%..... points = 0	1
	S 1.2 The soil 2 inches below the surface (or duff layer) is clay, organic *(Use NRCS definitions)*. **YES** = 3 points **NO** = 0 points	0
	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* • Dense, uncut, herbaceous vegetation > 90% of the wetland area ..... points = 6 • Dense, uncut, herbaceous vegetation > 1/2 of area ..... points = 3 • Dense, woody, vegetation > 1/2 of area. ..... points = 2 • Dense, uncut, herbaceous vegetation > 1/4 of area ..... points = 1 • Does not meet any of the criteria above for vegetation ..... points = 0 **Aerial photo or map with vegetation polygons**	Figure ___ 0
	Total for S 1 *Add the points in the boxes above*	1
S 2	**Does the wetland have the opportunity to improve water quality?** (see p. 67) Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ___ Grazing in the wetland or within 150 ft ___ Untreated stormwater discharges to wetland ___ Tilled fields, logging, or orchards within 150 ft. of wetland ___ Residential, urban areas, or golf courses are within 150 ft. upslope of wetland ___ Other _____ **YES** multiplier is 2 **NO** multiplier is 1	Multiplier 2
◆	**TOTAL – Water Quality Functions** Multiply the score from S1 by S2; then ***add score to table on p. 1***	2
	HYDROLOGIC FUNCTIONS – Indicators that wetland functions to reduce flooding and stream erosion.	
S 3	**Does the wetland have the potential to reduce flooding and stream erosion?** (see p.68)	
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms: *Choose the points appropriate for the description that best fits conditions in the wetland (stems of plants should be thick enough (usually > 1/8in), or dense enough to remain erect during surface flows).* • Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland..... points = 6 • Dense, uncut, **rigid** vegetation> 1/2 area of wetland ..... points = 3 • Dense, uncut, **rigid** vegetation > 1/4 area..... points = 1 • More than 1/4 of area is grazed, mowed, tilled, or vegetation is not rigid..... points = 0	1
	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows. The slope has small surface depressions that can retain water over at least 10% of its area. **YES** = 2 points **NO** = 0 points	2
	Add the points in the boxes above	3
S 4	**Does the wetland have the opportunity to reduce flooding and erosion?** (see p. 70) Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ___ Wetland has surface runoff that drains to a river or stream that has flooding problems ___ Other _____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is 2 **NO** multiplier is 1	Multiplier 2
◆	**TOTAL – Hydrologic Functions** Multiply the score from S3 by S4; then ***add score to table on p. 1***	6

Comments:

Wetland name or number 2.92R

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.		Points (only 1 score per box)
H 1	**Does the wetland have the potential to provide habitat for many species?**	
H 1.1	Vegetation structure *(see P. 72)*: *Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.* ___ Aquatic Bed ✓ Emergent plants ✓ Scrub/shrub (areas where shrubs have > 30% cover) ✓ Forested (areas where trees have > 30% cover) *If the unit has a forested class check if:* ___ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. *Add the number of vegetation types that qualify. If you have:* **Map of Cowardin vegetation classes** 4 structures or more.....points = 4 — 3 structures.....points = 2 2 structures.....points = 1 — 1 structure.....points = 0	Figure ___ 2
H 1.2	Hydroperiods *(see p.73)*: *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).* ___ Permanently flooded or inundated — 4 or more types present points = 3 ✓ Seasonally flooded or inundated — 3 or more types present.....points = 2 ✓ Occasionally flooded or inundated — 2 types present.....points = 1 ✓ Saturated only — 1 type present.....points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ **Lake-fringe wetland.....= 2 points** ___ **Freshwater tidal wetland.....= 2 points** **Map of hydroperiods**	Figure ___ 2
H 1.3	Richness of Plant Species *(see p. 75)*: Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.* If you counted: > 19 species.....points = 2 5 – 19 species.....points = 1 List species below if you want to: < 5 species.....points = 0	1
H 1.4	Interspersion of Habitats *(see p. 76)*: Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". **Use map of Cowardin classes.**	Figure ___ 2
H 1.5	Special Habitat Features *(see p. 77)*: *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ✓ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) ✓ Standing snags (diameter at the bottom > 4 inches) in the wetland ___ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) ___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ___ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ___ Invasive plants cover less than 25% of the wetland area in each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	2
	H 1 TOTAL Score – potential for providing habitat *Add the points in the column above*	9

Wetland name or number 2.82R

H 2	**Does the wetland have the <u>opportunity</u> to provide habitat for many species?**	(only 1 score per box)
	H 2.1 <u>Buffers</u> *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use).. ..... **points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference ..... **points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference ..... **points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference ..... **points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference ..... **points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK ..... **points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK ..... **points = 2** ____ Heavy grazing in buffer ..... **points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) ..... **points = 0** ____ Buffer does not meet any of the criteria above ..... **points = 1** **Arial photo showing buffers**	**Figure ___** 1
	H 2.2 <u>Corridors and Connections</u> *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* **YES = 4 points** (go to H 2.3) **NO** = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? **YES = 2 points** (go to H 2.3) **NO** = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR • Within 1 mile of a lake greater than 20 acres? **YES** = 1 point **NO** = 0 points	0

Comments:

Wetland name or number 2.32A

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82):
Which of the following priority habitats are within 330 ft. (100m) of the wetland? *NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.*

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

____ **Aspen Stands**: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)

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

____ **Old-growth forests**: (Old growth west of Cascade Crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings, with at least 20 trees/ha (8 trees/acre) > 81cm (32 in) dbh or > 200 years of age.

____ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade Crest.

____ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.

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

____ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages.

____ **Oregon white Oak**: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____ **Estuary/Estuary-like**: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons.

____ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has 3 or more priority habitats .= 4 points If wetland has 1 priority habit ...= 1 point
If wetland has 2 priority habitats .....= 3 points No habitats.....= 0 points
Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. (Nearby wetlands are addressed in question H 2.4).

0

H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)*

- There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development..... points = 5
- The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile ..... points = 5
- There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed. ..... points = 3
- The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile..... points = 3
- There is at least 1 wetland within 1/2 mile ..... points = 2
- There are no wetlands within 1/2 mile ..... points = 0

3

H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4* 7

TOTAL for H 1 from page 8 4

◆ **Total Score for Habitat Functions** Add the points for H 1 and H 2; then ***record the result on p. 1*** 11

Comments:

Wetland name or number 2,320

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ___ The dominant water regime is tidal, ___ Vegetated, and ___ With a salinity greater than 0.5 ppt. **YES** = Go to SC 1.1 **NO** ✓	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? **YES** = Category I **NO** = go to SC 1.2	**Cat. I**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? **YES** = Category I **NO** = Category II ___ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ___ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ___ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D _____ or accessed from WNHP/DNR web site _____ **YES** ____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 **NO** _____ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? **YES** = Category 1 **NO** ✓ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? **YES** = go to question 3 **NO** = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? **YES** = go to question 3 **NO** = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? **YES** = Is a bog for purpose of rating **NO** = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)*? **YES** = Category I **NO** = Is not a bog for purpose of rating	**Cat. I**

Wetland name or number 2.82a

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ___ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ___ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. **YES** = Category I **NO** = ✓ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ___ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ___ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* **YES** = Go to SC 5.1 **NO** ✓ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ___ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ___ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ___ The wetland is larger than 1/10 acre (4350 square ft.) **YES** = Category I **NO** = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? **YES** = Go to SC 6.1 **NO** ✓ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? **YES** = Category II **NO** = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? **YES** = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered **NO** for all types enter "Not Applicable" on p. 1	NA

Comments:

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT I-405 S. Renton Nickel
Date: 2/11/05
Applicant/owner: WSDOT
County: King
State: WA
Investigator(s): Jeff Collins, Adam Merrill
S/T/R: 20/23N/5E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID: U
Transect ID:
Plot ID: DP 2.9L-A

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Rubus discolor	S	100	FACU				
Cornus stolonifera	S	20	FACW				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 50%

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation ____
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations
Wetland plant database X
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? yes (no)
Rationale for decision/Remarks:
Vegetation that is FAC, FACW, or OBL does not exceed 50%.

HYDROLOGY

Is it the growing season? yes (no)
Based on: date soil temp (record temp ____) ____ other (explain)

Dept. of inundation: — inches
Depth to free water in pit: 15 inches
Depth to saturated soil: 10 inches

Water Marks: yes (no) on ____
Drift Lines: yes (no)
Oxidized Root (live roots) Channels <12 in. yes (no)
FAC Neutral: yes (no)
Sediment Deposits: yes (no)
Drainage Patterns: yes (no)
Local Soil Survey: yes (no)
Water-stained Leaves yes (no)

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? (yes) no
Rationale for decision/Remarks:
Soils saturated at 10 inches.

SOILS

Map Unit Name (Series & Phase): Urban land

Drainage Class: Variable

Taxonomy (subgroup): NA

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-14	A	10YR 3/2	—	—	Sandy loam	
14-18	B	10YR 4/2	7.5YR 4/6	medium, common, distinct	Sandy loam	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma (=1) matrix
- X Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? yes (no)

Rationale for decision/Remarks:
Soils with chroma of 2 with mottles occur below 12 inches.
Soils above 14 inches have no hydric soil indicators

Wetland Determination (circle)

Hydrophytic vegetation present?	yes	(no)		
Hydric soils present?	yes	(no)	Is the sampling point within a wetland?	yes (no)
Wetland hydrology present?	(yes)	no		

Rationale/Remarks:

Does not meet all 3 wetland determination criteria

NOTES: Upland Data Plot was dug on a hill side seep. Not all wetland criteria are met. So

Dense blackberry cover.

Revised 4/97

DATA FORM 1 ***(Revised)***
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT 405 Project S. Renton Applicant/owner: WSDOT Investigator(s): AM, JC	Date: 2/11/05 County: King State: WA S/T/R: 20/23N/5E
Do Normal Circumstances exist on the site? yes no Is the site significantly disturbed (atypical situation)? yes no Is the area a potential Problem Area? yes no Explanation of atypical or problem area:	Community ID: Wetland Transect ID: Plot ID: OP 2.9L-B

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Phalaris arundinacea	H	75	FACW				
Typha latifolia	H	25	OBL				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	X	Physiological/reproductive adaptations	
Morphological adaptations		Wetland plant database	X
Technical Literature		Personal knowledge of regional plant communities	
		Other (explain)	

Hydrophytic vegetation present? yes no
Rationale for decision/Remarks:
Both dominants are FAC or wetter.

HYDROLOGY

Is it the growing season? yes no Based on: _____ soil temp (record temp _____) time of year other (explain)	Water Marks: yes no on _____ Drift Lines: yes no	Sediment Deposits: yes no Drainage Patterns: yes no
Dept. of inundation: _____ inches Depth to free water in pit: 2 inches Depth to saturated soil: surface inches	Oxidized Root (live roots) Channels <12 in. yes no FAC Neutral: yes no	Local Soil Survey: yes no Water-stained Leaves yes no
Check all that apply & explain below: Stream, Lake or gage data: _____ Aerial photographs: _____ Other: _____	Other (explain):	

Wetland hydrology present? yes no
Rationale for decision/Remarks:
free water observed at 2" depth in soil pit.
Areas of inundation occurs within wetland.

SOILS

Map Unit Name (Series & Phase) Urban land

Drainage Class variable

Taxonomy (subgroup) NA

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-8	A	5Y2.5/1			loam	
8-16	B	2.5Y 4/0	7.5YR 4/6	many, distinct, medium	loamy sand	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma (=1) matrix
- X Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:

Chroma of 2 w/ mottles in B horizon.

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no			
Hydric soils present?	(yes)	no	Is the sampling point within a wetland?	(yes)	no
Wetland hydrology present?	(yes)	no			

Rationale/Remarks:

All 3 wetland criteria met.

NOTES:

Plot B is located in PEM section of wetland, near south end. Wetland is on Wal-Mart/Sam's Club property. Area is seasonally inundated; areas of ponded water occur. Wetland receives flow from surface runoff, and possibly a hillside seep.

Revised 4/97

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT 405 Project - S. Renton
Applicant/owner: WSDOT
Investigator(s): AM, JC

Date: 3/3/05
County: Kings
State: WA
S/T/R: 20/23N/5E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID: Wetland (scrub-shrub)
Transect ID:
Plot ID: DP 29L-C

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Salix lucida	S	40	FACW				
Alnus rubra	T	40	FAC				
Ribes discolor	S	35	FACU				
Pteridium aquilinum	H	40	FACU				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 50

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	X	Physiological/reproductive adaptations	
Morpbological adaptations		Wetland plant database	X
Technical Literature		Personal knowledge of regional plant communities	
		Other (explain)	

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
Visual observation of plants growing in saturated soil. Saturation is likely to occur for at least 2 weeks.

HYDROLOGY

Is it the growing season? (yes) no
Based on: ____ soil temp (record temp ____)
time of year ____ other (explain)

Dept. of inundation: — inches
Depth to free water in pit: 3 inches
Depth to saturated soil: surface inches

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Water Marks: (yes) no on ____	Sediment Deposits: yes (no)
Drift Lines: yes (no)	Drainage Patterns: (yes) no
Oxidized Root (live roots) Channels <12 in. yes (no)	Local Soil Survey: yes (no)
FAC Neutral: yes no	Water-stained Leaves (yes) no
Other (explain):	

Wetland hydrology present? (yes) no
Rationale for decision/Remarks:
Free water observed at 3" depth in soil. Areas of permanent ponding are nearby.

SOILS

Map Unit Name (Series & Phase): Urban land

Drainage Class: variable

Taxonomy (subgroup): NA

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-8	A	10YR3/2			silt loam w/ peat	
8-16	B	10YR2/1			Sandy loam	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- Y Gleyed or Low-Chroma (=1) matrix
- ____ Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:

Low chroma matrix observed in B horizon (18" depth)

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no			
Hydric soils present?	(yes)	no	Is the sampling point	(yes)	no
Wetland hydrology present?	(yes)	no	within a wetland?		

Rationale/Remarks:

All 3 wetland criteria met.

NOTES:

Plot 3 is in approximate east-center portion of wetland 2.9L, in PSS section. Plot is near blackberry slope, and ponded area to the west. Soils in blackberry slope are generally 2/1 sand loam, which appears well-drained. The wetland boundary on the slope was flagged where saturation was not observed.

Revised 4/97

DRAFT WETLAND RATING FORM – WESTERN WASHINGTON

Name of wetland (if known): 2.9L

Location: SEC: 20 TWNSHP: 23N RNGE: 5E (attach map with outline of wetland to rating form)

Person(s) Rating Wetland: A. Merrill Affiliation: S. Renton WSDOT 405 Project Date of site visit: 2/11/05

DRAFT SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III X IV___

Category I = Score >70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	10
Score for Hydrologic Functions	16
Score for Habitat Functions	14
TOTAL score for functions	40

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply X

Final Category (choose the "highest" category from above) III

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X		

Does the wetland being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
SP1. *Has the wetland been documented as a habitat for any Federally listed Threatened or Endangered plant or animal species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		√
SP2. *Has the wetland been documented as habitat for any State listed Threatened or Endangered plant or animal species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database.		√
SP3. *Does the wetland contain individuals of Priority species listed by the WDFW for the state?*		√
SP4. *Does the wetland have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		√

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

Wetland Name: _____ **Date:** _____

1. Are the water levels in the wetland usually controlled by tides (i.e. except during floods)?
(NO) – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. Is the topography within the wetland flat and precipitation is only source (>90%) of water to it.
(NO) – go to 3 **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the wetland **meet both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) where at least 20 acres (8 ha) are permanently inundated (ponded or flooded);
___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
(NO) – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the wetland **meet all** of the following criteria?
____The wetland is on a slope (*slope can be very gradual*),
____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
____The water leaves the wetland **without being impounded?**
NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks(depressions are usually <3ft diameter and less than 1 foot deep).*
(NO) - go to 5 **YES** – The wetland class is **Slope**

5. Is the wetland in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river? The flooding should occur at least once every two years, on the average, to answer "yes." *The wetland can contain depressions that are filled with water when the river is not flooding.*
(NO) - go to 6 **YES** – The wetland class is **Riverine**

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

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

7. Is the wetland located in a very flat area with no obvious depression and no stream or river running through it and providing water. The wetland seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

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

8. Your wetland seems to be difficult to classify. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. Sometimes we find characteristics of several different hydrogeomorphic classes within one wetland boundary. Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland being rated. If the area of the second class is less than 10% classify the wetland using the first class.

HGM Classes Within a Delineated Wetland Boundary	*Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

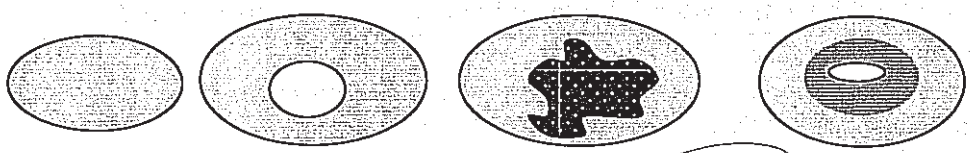
D	Depressional and Flats Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
D	**D 1. Does the wetland have the potential to improve water quality?** *(see p. 38)*	
D	D 1.1 Characteristics of surface water flows out of the wetland: Wetland is a depression with no surface water outlet — points = 3 Wetland has an intermittently flowing, or highly constricted, outlet — points = 2 Wetland has an unconstricted surface outlet — points = 1 Wetland is flat and has no obvious outlet and/or outlet is a ditch — points = 1	2
D	D 1.2 The soil 2 inches below the surface is clay, organic, or smells anoxic (hydrogen sulfide or rotten eggs). YES — points = 4 NO — points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest class): Wetland has persistent, ungrazed, vegetation > = 95% of area — points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area — points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area — points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area — points = 0	3
0 D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland — points = 4 Area seasonally ponded is > ¼ total area of wetland — points = 2 Area seasonally ponded is < ¼ total area of wetland — points = 0 NOTE: *See text for indicators of seasonal and permanent inundation..*	0
D	**Total for D 1** *Add the points in the boxes above*	5
D	**D 2. Does the wetland have the opportunity to improve water quality?** *(see p. 44)* Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging X Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other _____ YES multiplier is 2 NO multiplier is 1	multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	10

D	Depressional and Flats Wetlands	Points
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation	
	D 3. Does the wetland have the <u>potential</u> to reduce flooding and erosion? *(see p. 46)*	
D	D 3.1 Characteristics of surface water flows out of the wetland Wetland has no surface water outlet — points = 4 Wetland has an intermittently flowing, or highly constricted, outlet — points = 2 (circled) Wetland is flat and has no obvious outlet and/or outlet is a small ditch — points = 1 Wetland has an unconstricted surface outlet — points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet* Marks of ponding are 3 ft or more above the surface — points = 7 The wetland is a "headwater" wetland" — points = 5 Marks of ponding between 2 ft to < 3 ft from surface — points = 5 Marks are at least 0.5 ft to < 2 ft from surface — points = 3 (circled) Wetland is flat but has small depressions on the surface that trap water — points = 1 Marks of ponding less than 0.5 ft — points = 0	3
D	D 3.3 Contribution of wetland to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland itself.* The area of the basin is less than 10 times the area of wetland — points = 5 The area of the basin is 10 to 100 times the area of the wetland — points = 3 (circled) The area of the basin is more than 100 times the area of the wetland — points = 0 Wetland is in the FLATS class (basin = the wetland, by definition) — points = 5	3
D	**Total for D 3** *Add the points in the boxes above*	8
D	**D 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** *(see p. 49)* Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems X Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other _____ (YES) multiplier is 2 NO multiplier is 1	multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	16

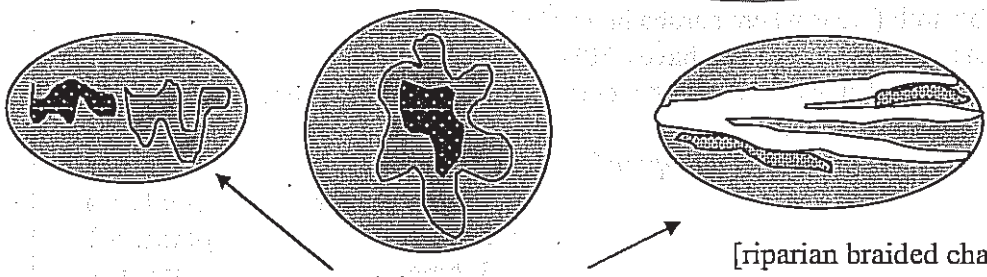
These questions apply to wetlands of all HGM classes.	Points
HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat	
H 1. Does the wetland have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin) if the class covers more than 10% of the area of the wetland or ¼ acre.* ___ Aquatic bed __X__ Emergent plants __X__ Scrub/shrub (areas where shrubs have >30% cover) ___ Forested (areas where trees have >30% cover) ___ Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) *Add the number of vegetation types that qualify. If you have:* 4 types or more points = 4 3 types points = 2 2 types (points = 1) 1 type points = 0	1
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* __X__ Permanently flooded or inundated — 4 or more types present (points = 3) __X__ Seasonally flooded or inundated — 3 types present points = 2 ___ Occasionally flooded or inundated — 2 types present point = 1 __X__ Saturated only __X__ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points**	3
H 1.3. Richness of Plant Species *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* If you counted: > 19 species points = 2 *List species below if you want to:* 5 - 19 species (points = 1) < 5 species points = 0	1

H 1.4. Interspersion of habitats *(see p. 76)*

Decided from the diagrams below whether interspersion between types of vegetation (described in H 1.1), or vegetation types and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



None = 0 points Low = 1 point Moderate = 2 points



[riparian braided channels]

High = 3 points

NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".

2

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

X Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

____ Standing snags (diameter at the bottom > 4 inches) in the wetland

____ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m)

____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present

X At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)*

____ Invasive plants cover less than 25% of the wetland area in each stratum of plants

2

H 1. TOTAL Score - potential for providing habitat
Add the scores in the column above

9

Comments

H 2. Does the wetland have the opportunity to provide habitat for many species?

H 2.1 Buffers *(see p. 80)*

Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. **(relatively undisturbed also means no-grazing)** **Points = 5**

— 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4**

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3**

If buffer does not meet any of the three criteria above

— No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— Heavy grazing in buffer. **Points = 1**

— Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.**

— Buffer does not meet any of the criteria above. **Points = 1**

1

H 2.2 Corridors and Connections *(see p. 81)*

H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*).

YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2

H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above?

YES = **2 points** (*go to H 2.3*) NO = H 2.2.3

0

H 2.2.3 Is the wetland:

within 5 mi (8km) of a brackish or salt water estuary OR
within 3 mi of a large field or pasture (>40 acres) OR
within 1 mi of a lake greater than 20 acres?

YES = **1 point** NO = **0 points**

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)*

Which of the following priority habitats are within 330ft (100m) of the wetland?
(see text for a more detailed description of these priority habitats)

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

____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

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

____ **Old-growth forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age.

____ **Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____ **Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.

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

____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages

____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____ **Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5% during the period of average annual low flow. Includes both estuaries and lagoons.

____ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** (circled) No habitats = 0 points

1

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores in the column above*	5
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	17

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: I-405

Applicant/Owner: WSDOT

Investigator(s): ADAM GAZE / JOSEPH PURSLEY

Date: 2/2/2007

County: KING

State: WA

S/T/R: 20/23/5

Do normal circumstances exist on the site? ☒ Yes ☐ No

Is the site significantly disturbed (atypical situation)? ☐ Yes ☒ No

Is the area a potential problem area? ☐ Yes ☒ No

Explanation of atypical or problem area:

Community ID:

Transect ID: WET

Plot ID: 3.0 E Wetland Plot

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
Phalaris arundinacea	H	80	FACW				
Equisetum arvense	H	10	FAC				
Rubus armeniacus	S	20	FACU				
Alnus rubra	T	20	FAC				
Gallium aparine	H	10	FacU				
Ranunculus repens	H	10	FacW				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: >50%

Check all indicators that apply and explain below:

- ☒ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☐ Wetland plant database
- ☒ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☒ Yes ☐ No

Rationale for decision/Remarks:

HYDROLOGY

Is it the growing season? ☐ Yes ☒ No

Based on: ☐ Soil temp (record temp) ☒ Other (explain) Time of Year

Depth of inundation: inches

Depth to free water in pit: 0

Depth to saturated soil: 4 IN

Water Marks: ☐ Yes ☒ No on

Sediment Deposits: ☒ Yes ☐ No

Drift Lines: ☐ Yes ☒ No

Drainage Patterns: ☒ Yes ☐ No

Oxidized Root (live roots) Channels <12in: ☐ Yes ☒ No

Local Soil Survey: ☐ Yes ☒ No

FAC Neutral: ☐ Yes ☒ No

Water-stained Leaves: ☒ Yes ☐ No

Check all that apply & explain below:

- ☐ Stream, lake or gage data
- ☐ Aerial photographs
- ☐ Other

Other (explain):

Wetland hydrology present? ☒ Yes ☐ No

Rationale for decision remarks: Evidence of hydrology

SOILS

Map Unit Name (Series and Phase)

Drainage Class

Field observations confirm mapped type? ☐ Yes ☒ No

Taxonomy (subgroup)

Profile Description						Drawing of soil profile (match description)
Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	
0-2	A	3/2 10YR	-	-	Sandy loam	
2-10	AB	3/1 10YR	4/6 7.5YR	C, M, d	clay loam	
10-18	B		2.5 Y	C, C, P		

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma (=1) matrix
- ☒ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☒ Yes ☐ No

Rationale for decision/Remarks:

Wetland Determination

Hydrophytic vegetation present?	☒ Yes	☐ No
Hydric soils present?	☒ Yes	☐ No
Wetland hydrology present?	☒ Yes	☐ No
Is the sampling point within a wetland?	☒ Yes	☐ No

Rationale/Remarks:

NOTES: All 3 parameters met.

Revised 4/97

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: I-405
Applicant/owner: WSDOT
Investigator(s): ADAM GACE/Joe Pursley

Date: 2/2/07
County: KING
State: WA
S/T/R: 20/23/5

Do normal circumstances exist on the site? ☒ Yes ☐ No
Is the site significantly disturbed (atypical situation)? ☐ Yes ☒ No
Is the area a potential problem area? ☐ Yes ☒ No
Explanation of atypical or problem area:

Community ID:
Transect ID: UPland
Plot ID: 3.0R

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
Corylus cornuta	T	45	FACU				
Rubus armeniacus	S	25	FACU				
Tellima grandiflora	H	5	None				
Polystichum munitum	H	5	FACU				
Oemleria cerasiformis	S	10	FACU				
Hedera helix	H	20	FacU				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC:

Check all indicators that apply and explain below:

- ☐ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☐ Wetland plant database
- ☐ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☒ No
Rationale for decision/Remarks: <50% hydric species

HYDROLOGY

Is it the growing season? ☐ Yes ☒ No

Based on: ☐ Soil temp (record temp) ☒ Other (explain) Time of Year

Depth of inundation: inches
Depth to free water in pit: 0
Depth to saturated soil: 0

Check all that apply & explain below:

- ☐ Stream, lake or gage data
- ☐ Aerial photographs
- ☐ Other

Water Marks: ☐ Yes ☒ No on
Drift Lines: ☐ Yes ☒ No
Oxidized Root (live roots) Channels <12in: ☐ Yes ☒ No
FAC Neutral: ☐ Yes ☒ No

Sediment Deposits: ☐ Yes ☒ No
Drainage Patterns: ☐ Yes ☒ No
Local Soil Survey: ☐ Yes ☒ No
Water-stained Leaves: ☐ Yes ☒ No

Other (explain):

Wetland hydrology present? ☐ Yes ☒ No
Rationale for decision/remarks: No hydric indicators

SOILS

Map Unit Name (Series and Phase) :

Drainage Class

Field observations confirm mapped type? ☐ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-3	A	3/2 10YR	–	–	Sandy loam	
3-10	AB	3/2 10YR	4/6 7.5 YR	f, m, f	fine	
			4/2 7.5 YR	m, m, d	coarse	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☒ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☒ Yes ☐ No

Rationale for decision/Remarks:

Wetland Determination

Hydrophytic vegetation present?	☐ Yes	☒ No
Hydric soils present?	☒ Yes	No
Wetland hydrology present?	☐ Yes	☒ No
Is the sampling point within a wetland?	☐ Yes	☒ No

Rationale/Remarks:

NOTES: Soils hydric, but lacking in vegetation & hydrology.

Revised 4/97

Wetland name or number 3.0R

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 - Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 3.0R Date of site visit: 2/2/2007

Rated by Joseph R. Purcley Trained by Ecology? Yes__ No X Date of training____

NW SEC: 20 TWNSHP: 23 RNGE: 05 Is S/T/R in Appendix D? Yes__ No X

Map of wetland unit: Figure ____ Estimated size 0.04 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III X IV___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	10
Score for Hydrologic Functions	20
Score for Habitat Functions	11
TOTAL score for Functions	41

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply X

Final Category (choose the "highest" category from above) III

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	
Natural Heritage Wetland		Riverine	X
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above		Check if unit has multiple HGM classes present	

Wetland name or number 3.OR

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	**YES**	**NO**
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number 3.0R

Classification of Wetland Units in Western Washington

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

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
(NO) go to 2 **YES** – the wetland class is **Tidal Fringe**

   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe** **NO – Saltwater Tidal Fringe (Estuarine)**

   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
(NO) go to 3 **YES** – The wetland class is **Flats**

   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet both** of the following criteria?
   ___ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;
   ___ At least 30% of the open water area is deeper than 6.6 ft (2 m)?
(NO) go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?
   ___ The wetland is on a slope (*slope can be very gradual*),
   ___ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ___ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*
(NO) go to 5 **YES** – The wetland class is **Slope**

Wetland name or number 3.0R

5. Does the entire wetland unit **meet all** of the following criteria?

X The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

X The overbank flooding occurs at least once every two years.

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

NO - go to 6 (YES) → The wetland class is **Riverine**

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

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

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

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

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

Wetland name or number 3.0R

	Riverine and Freshwater Tidal Fringe Wetlands HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
	R 3. Does the wetland unit have the potential to reduce flooding and erosion?	*(see p.54)*
R	R 3.1 Characteristics of the overbank storage the unit provides: *Estimate the average width of the wetland unit perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of unit)/(average width of stream between banks).* If the ratio is more than 20 — points = 9 If the ratio is between 10 – 20 — points = 6 If the ratio is 5 - <10 — points = 4 If the ratio is 1 - <5 — points = 2 If the ratio is < 1 — points = 1 Aerial photo or map showing average widths	Figure ___ 6
R	R 3.2 Characteristics of vegetation that slow down water velocities during floods: *Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description.* (polygons need to have >90% cover at person height NOT Cowardin classes): Forest or shrub for >1/3 area OR herbaceous plants > 2/3 area — points = 7 Forest or shrub for > 1/10 area OR herbaceous plants > 1/3 area — points = 4 Vegetation does not meet above criteria — points = 0 Aerial photo or map showing polygons of different vegetation types	Figure ___ 4
R	*Add the points in the boxes above*	10
R	**R 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. *Note which of the following conditions apply.* X There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding. X There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding — Other _____ *(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike)* **YES** multiplier is **2** **NO** multiplier is **1**	*(see p.57)* multiplier 2
R	**TOTAL - Hydrologic Functions** Multiply the score from R 3 by R 4 ***Add score to table on p. 1***	20

Comments

Wetland name or number 3.OR

		Points (only 1 score per box)
R	**Riverine and Freshwater Tidal Fringe Wetlands** WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
R	**R 1. Does the wetland unit have the potential to improve water quality?**	*(see p.52)*
R	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: Depressions cover >3/4 area of wetland — points = 8 Depressions cover > 1/2 area of wetland — points = 4 If depressions > ½ of area of unit draw polygons on aerial photo or map Depressions present but cover < 1/2 area of wetland — points = 2 No depressions present — points = 0	Figure ___ 2
R	R 1.2 Characteristics of the vegetation in the unit (areas with >90% cover at person height): Trees or shrubs > 2/3 the area of the unit — points = 8 Trees or shrubs > 1/3 area of the unit — points = 6 Ungrazed, herbaceous plants > 2/3 area of unit — points = 6 Ungrazed herbaceous plants > 1/3 area of unit — points = 3 Trees, shrubs, and ungrazed herbaceous < 1/3 area of unit — points = 0 Aerial photo or map showing polygons of different vegetation types	Figure ___ 3
R	*Add the points in the boxes above*	5
R	**R 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150ft X Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 feet of wetland X A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland X The river or stream linked to the wetland has a contributing basin where human activities have raised levels of sediment, toxic compounds or nutrients in the river water above standards for water quality — Other **YES** multiplier is **2** **NO** multiplier is **1**	*(see p.53)* multiplier 2
R	**TOTAL - Water Quality Fuuctions** Multiply the score from R 1 by R 2 ***Add score to table on p. 1***	10

Comments

Wetland name or number 3.0R

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see p. 72)***	**Figure ___**
Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres	
___ Aquatic bed	
X Emergent plants	
X Scrub/shrub (areas where shrubs have >30% cover)	
___ Forested (areas where trees have >30% cover)	
If the unit has a forested class check if:	
___ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon	
Add the number of vegetation structures that qualify. If you have:	
4 structures or more — points = 4	
Map of Cowardin vegetation classes — 3 structures — points = 2	
(2 structures) — (points = 1)	1
1 structure — points = 0	
H 1.2. <u>Hydroperiods</u> ***(see p. 73)***	**Figure ___**
Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)	
___ Permanently flooded or inundated — 4 or more types present — points = 3	
X Seasonally flooded or inundated — 3 types present — points = 2	
___ Occasionally flooded or inundated — (2 types present) — point = 1	
X Saturated only — 1 type present — points = 0	
___ Permanently flowing stream or river in, or adjacent to, the wetland	
___ Seasonally flowing stream in, or adjacent to, the wetland	
___ ***Lake-fringe wetland* = 2 points**	
___ ***Freshwater tidal wetland* = 2 points** — Map of hydroperiods	1
H 1.3. <u>Richness of Plant Species</u> ***(see p. 75)***	
Count the number of plant species in the wetland that cover at least 10 ft^2. *(different patches of the same species can be combined to meet the size threshold)*	
You do not have to name the species.	
Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle	
If you counted: > 19 species — points = 2	
List species below if you want to: — (5 - 19 species) — (points = 1)	
< 5 species — points = 0	1

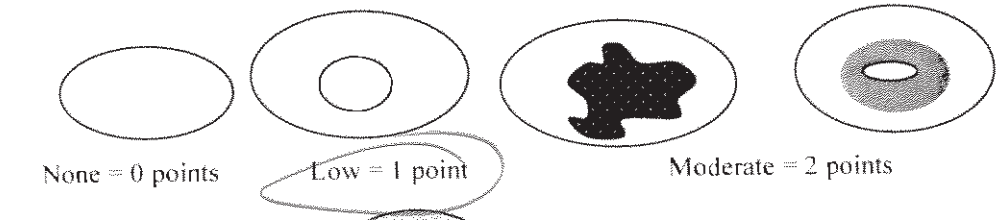
Total for page 3

Wetland name or number 3.OR

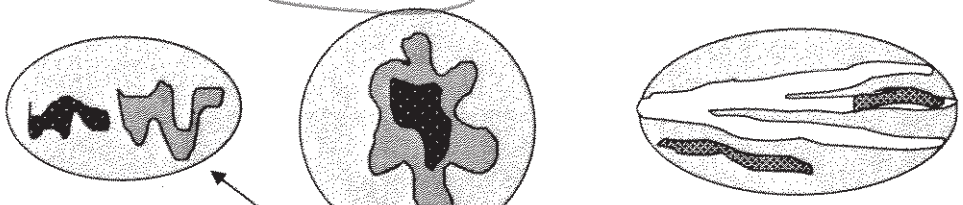
H 1.4. Interspersion of habitats *(see p. 76)*

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.

Figure ___



None = 0 points Low = 1 point Moderate = 2 points



[riparian braided channels]

High = 3 points

NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

1

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

___ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

___ Standing snags (diameter at the bottom > 4 inches) in the wetland

___ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

___ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)*

___ Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

0

H 1. TOTAL Score - potential for providing habitat

Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

4

Comments

Wetland name or number 3.OR

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers *(see p. 80)* *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** X 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** — Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	Figure ___ 4
H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** *(go to H 2.3)* NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** *(go to H 2.3)* NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 5

Wetland name or number 3.OR

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)*

Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.*
These are DFW definitions. Check with your local DFW biologist if there are any questions.

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

____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

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

____**Old-growth forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age.

____**Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____**Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.

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

____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages

____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____**Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____**Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5ppt. during the period of average annual low flow. Includes both estuaries and lagoons.

____**Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point**
No habitats = 0 points

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)

0

Wetland name or number 3.0R

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 ✓ There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	2
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	7
TOTAL for H 1 from page 14	4
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	11

Wetland name or number _____

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands *(see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 NO ___	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number 3.0R

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ___ or accessed from WNHP/DNR web site ___ YES ___ – contact WNHP/DNR (see p. 79) and go to SC 2.2 (NO) SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I (NO) not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 (No - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 (No -) is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating (No - go to Q. 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I (No) Is not a bog for purpose of rating	**Cat. I**

Wetland name or number 3.OR

SC 4.0 Forested Wetlands *(see p. 90)* Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* — **Old-growth forests**: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I (NO) not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* YES = Go to SC 5.1 (NO) not a wetland in a coastal lagoon SC 5.1 Does the wetland meets all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than 1/10 acre (4350 square feet) YES = Category I (NO) = Category II	**Cat. I** **Cat. II**

Wetland name or number 3.0R

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 (NO) not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula- lands west of SR 103 • Grayland-Westport- lands west of SR 105 • Ocean Shores-Copalis- lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II (NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT Panther Creek wetlands
Date: 1/27/04
Applicant/owner: WSDOT
County: King
Investigator(s): I. Logan, A. Merrill, J. Collins
State: WA
S/T/R: 30/23N/5E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID: wetland P/24.7R
Transect ID:
Plot ID: DP-1

VEGETATION (For strata, indicate T = tree; S = shrub; H = berb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Cornus stolonifera ✡	S	45	FACW				
Salix sp. ✡	T	25	FAC+ to FACW				
Sambucus racemosa	S	5	FACU				
Rubus spectobilis	S	15	FAC+				
Populus balsamifera ✡	T	25	FAC				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation X
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations ____
Wetland plant database ____
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
No herbs found, heavy leaf litter. All dominants FAC or wetter

HYDROLOGY

Is it the growing season? yes (no)
Based on: ____ soil temp (record temp ____) time of year other (explain)

Water Marks: yes (no) on ____
Sediment Deposits: yes (no)
Drift Lines: yes (no)
Drainage Patterns: yes (no)
Dept. of inundation: — inches
Oxidized Root (live roots) Channels <12 in. yes (no)
Local Soil Survey: yes no
Deptb to free water in pit: 8 inches
Depth to saturated soil: 3 inches
FAC Neutral: yes no
Water-stained Leaves (yes) no

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____
Other (explain):

Wetland hydrology present? (yes) no
Rationale for decision/Remarks:
Soil saturated, and free water observed in pit.

SOILS

Map Unit Name (Series & Phase) Urban Land

Drainage Class variable

Taxonomy (subgroup) —

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-3	A1	10YR 2/2	—	—	silty clay loam	
3-16	A2	10YR 3/2	10YR 4/4	d, c, m	silty clay loam	
16+	B	2.5Y 4/2	10YR 4/6	d, c, m	sandy clay loam	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma (=1) matrix
- X Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:

Low chroma matrix w/ mottles observed.

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no			
Hydric soils present?	(yes)	no	Is the sampling point within a wetland?	(yes)	no
Wetland hydrology present?	(yes)	no			

Rationale/Remarks:

All 3 wetland criteria met.

NOTES:

Data Plot 1 in wetland P is located at south end of wetland, near right-of-way fence. Hospital parking garage is located to the east.

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT Panther Creek Wetlands
Date: 1/27/04
Applicant/owner: WSDOT
County: King
State: WA
Investigator(s): A. Merrill, J. Collins
S/T/R: 31 /23N/5E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID:
Transect ID: wetland P-24.7R
Plot ID: DP 2

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Rubus discolor	S	70	FACU				
Pseudotsuga menziesii	T	25	FACU				
Acer macrophyllum	T	20	FACU				
Oemleria cerasiformis	S	15	FACU				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 0

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation ____
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations ____
Wetland plant database ____
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? yes (no)
Rationale for decision/Remarks:
All plants are FACU.

HYDROLOGY

Is it the growing season? yes (no)
Based on: ____ soil temp (record temp ____)
time of year other (explain)

Dept. of inundation: ~~—~~ inches
Depth to free water in pit: ~~—~~ inches
Depth to saturated soil: 17 inches

Water Marks: yes (no) on ____
Drift Lines: yes (no)
Sediment Deposits: yes (no)
Drainage Patterns: yes (no)
Oxidized Root (live roots) Channels <12 in. yes (no)
Local Soil Survey: yes no
FAC Neutral: yes no
Water-stained Leaves yes (no)

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____
Other (explain):

Wetland hydrology present? yes (no)
Rationale for decision/Remarks:
~~No moisture in pit indicators~~ water in pit is due to recent rain. Soil is not saturated.

SOILS

Map Unit Name (Series & Phase) Urban Land

Drainage Class Variable

Taxonomy (subgroup) —

Field observations confirm mapped type? Yes (No)

Profile Description						
Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-8	A1	10YR 3/2	—	[illegible]	Sandy loam	
8-10	A2	10YR 3/2	10YR 4/6	f, c, fine	loam	
10-16+	B	5Y 5/2	7.5YR 4/6	p, m, coarse	clay loam	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma (=1) matrix
- X Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:

~~Indicators~~ mottles very faint. Marginal hydric soil. In A-horizon

Wetland Determination (circle)

Hydrophytic vegetation present?	yes	(no)		
Hydric soils present?	(yes)	no	Is the sampling point within a wetland?	yes (no)
Wetland hydrology present?	yes	(no)		

Rationale/Remarks:

Vegetation and hydrology criteria not met.

NOTES:

Data Plot 2 in wetland P is located near south-most portion of wetland, and adjacent to highway. Plot is on raised area, surround on 3 sides by wetland.

Revised 4/97

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT Panther Creek Wetlands	Date: 1/27/04
Applicant/owner: WSDOT	County: King State: WA
Investigator(s): Jeff Collins, Adam Merrill	S/T/R: 30 /23N/5E
Do Normal Circumstances exist on the site? (yes) no Is the site significantly disturbed (atypical situation)? yes (no) Is the area a potential Problem Area? yes (no) Explanation of atypical or problem area:	Community ID: Transect ID: Wetland P-24.7R Plot ID: OP3

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Phalaris arundinacea	H	100	FACW				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	X	Physiological/reproductive adaptations	____
Morphological adaptations	____	Wetland plant database	____
Technical Literature	____	Personal knowledge of regional plant communities	____
		Other (explain)	____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
Dominant veg. is FACW

HYDROLOGY

Is it the growing season? yes (no)

Based on: ____ soil temp (record temp ____)
time of year other (explain)

Dept. of inundation:	____ inches	Water Marks: yes (no) on ____	Sediment Deposits: yes (no)
		Drift Lines: yes (no)	Drainage Patterns: yes (no)
Depth to free water in pit:	0 inches	Oxidized Root (live roots) Channels <12 in. yes (no)	Local Soil Survey: yes no
Depth to saturated soil:	0 inches	FAC Neutral: yes no	Water-stained Leaves (yes) no

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? (yes) no
Rationale for decision/Remarks:
Soil saturated to surface, areas of ponding nearby.

SOILS

Map Unit Name (Series & Phase): Urban land

Drainage Class: Variable

Taxonomy (subgroup): —

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-5	A1	10YR 2/1	—	—	silt loam	
5-16	A2	2.5Y 3/1	—	—	sandy loam	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- X Gleyed or Low-Chroma (=1) matrix
- ____ Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:

Black soil in A horizon

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no		
Hydric soils present?	(yes)	no	Is the sampling point	(yes) no
Wetland hydrology present?	(yes)	no	within a wetland?	

Rationale/Remarks:

All 3 wetland criteria met.

NOTES:

In southern portion of wetland. In emergent area just north of forested area. Casino directly on opposite side of freeway. Emergent area dominated by reed canary grass.

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT Panther Creek wetland
Date: 1/27/04
Applicant/owner: WSDOT
County: king
Investigator(s): I. Logan, A. Merrill, J. Collins
State: WA
S/T/R: 30 /23N/5E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID:
Transect ID: Wetland P-24.7R
Plot ID: DP 4

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Rubus discolor	S	35	FACU				
Salix sp.	S	40	FAC+ to FACW				
Polygonum sp.	H	3	OBL				
Alnus rubra	T	40	FAC				
Phalaris arundinacea	H	30	FACW				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 75

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation X
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations ____
Wetland plant database ____
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
Willow growing in inundated conditions. 3/4 of dominant plants are FAC or wetter.

HYDROLOGY

Is it the growing season? yes (no)

Based on: ____ soil temp (record temp ____)
time of year other (explain)

Dept. of inundation: — inches
Depth to free water in pit: 10 inches
Depth to saturated soil: 5 inches

Water Marks: (yes) no on ____
Sediment Deposits: yes (no)
Drift Lines: yes (no)
Drainage Patterns: yes (no)
Oxidized Root (live roots) Channels <12 in. yes (no)
Local Soil Survey: yes no
FAC Neutral: yes no
Water-stained Leaves (yes) no

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? (yes) no
Rationale for decision/Remarks:
Plot directly adjacent to inundated area. Free water and saturated soils observed in soil pit.

SOILS

Map Unit Name (Series & Phase) Urban Land

Drainage Class Variable

Taxonomy (subgroup) —

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-20	A	10YR3/2	10YR4/6	d, c, f	loam	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma (=1) matrix
- X Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:

Very deep A horizon; low chroma w/ mottles

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no		
Hydric soils present?	(yes)	no	Is the sampling point within a wetland?	(yes) no
Wetland hydrology present?	(yes)	no		

Rationale/Remarks:

All 3 wetland criteria met.

NOTES:

DP 4 in Wetland P is located near toe of slope, at western-middle portion of wetland. Plot is near wetland boundary to west, and ponded area to east.

Revised 4/97

DRAFT WETLAND RATING FORM – WESTERN WASHINGTON

Name of wetland (if known): WETLAND 24.7R - PANTHER CREEK

Location: SEC: 30 TWNSHP: 23N RNGE: 5E (attach map with outline of wetland to rating form)

Person(s) Rating Wetland: J. LOGAN, B. BURKE Affiliation: WSDOT I-405, RENTON, NICKEL Date of site visit: 1/27/04

DRAFT SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II X III___ IV___

Category I = Score >70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	26
Score for Hydrologic Functions	16
Score for Habitat Functions	19
TOTAL score for functions	61

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply X

Final Category (choose the "highest" category from above) II

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X		

Does the wetland being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
SP1. *Has the wetland been documented as a habitat for any Federally listed Threatened or Endangered plant or animal species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland been documented as habitat for any State listed Threatened or Endangered plant or animal species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database.		X
SP3. *Does the wetland contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.	X	

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

Wetland Name: WETLAND A 24.7R **Date:** 1-27-05

1. Are the water levels in the wetland usually controlled by tides (i.e. except during floods)?
(NO) go to 2 **YES** – the wetland class is **Tidal Fringe**

   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. Is the topography within the wetland flat and precipitation is only source (>90%) of water to it.
(NO) go to 3 **YES** – The wetland class is **Flats**

   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the wetland **meet both** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) where at least 20 acres (8 ha) are permanently inundated (ponded or flooded);
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
(NO) go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the wetland **meet all** of the following criteria?
   ___The wetland is on a slope (*slope can be very gradual*),
   ___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ___The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks(depressions are usually <3ft diameter and less than 1 foot deep).*
(NO) go to 5 **YES** – The wetland class is **Slope**

5. Is the wetland in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river? The flooding should occur at least once every two years, on the average, to answer "yes." *The wetland can contain depressions that are filled with water when the river is not flooding.*
(NO) go to 6 **YES** – The wetland class is **Riverine**

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

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

7. Is the wetland located in a very flat area with no obvious depression and no stream or river running through it and providing water. The wetland seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

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

8. Your wetland seems to be difficult to classify. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. Sometimes we find characteristics of several different hydrogeomorphic classes within one wetland boundary. Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland being rated. If the area of the second class is less than 10% classify the wetland using the first class.

HGM Classes Within a Delineated Wetland Boundary	*Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

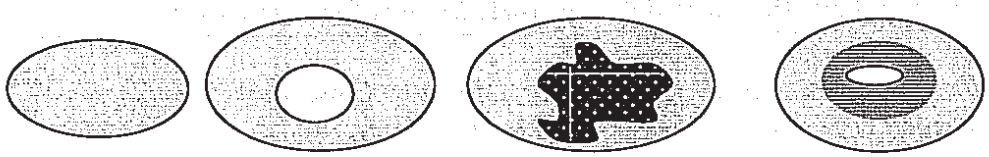
D	Depressional and Flats Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
D	**D 1. Does the wetland have the potential to improve water quality?** *(see p. 38)*	
D	D 1.1 Characteristics of surface water flows out of the wetland: Wetland is a depression with no surface water outlet — points = 3 Wetland has an intermittently flowing, or highly constricted, outlet — points = 2 Wetland has an unconstricted surface outlet — points = 1 Wetland is flat and has no obvious outlet and/or outlet is a ditch — points = 1	2
D	D 1.2 The soil 2 inches below the surface is clay, organic, or smells anoxic (hydrogen sulfide or rotten eggs). YES — points = 4 NO — points = 0	4
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest class): Wetland has persistent, ungrazed, vegetation >= 95% of area — points = 5 Wetland has persistent, ungrazed, vegetation >= 1/2 of area — points = 3 Wetland has persistent, ungrazed vegetation >= 1/10 of area — points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area — points = 0	5
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland — points = 4 Area seasonally ponded is > ¼ total area of wetland — points = 2 Area seasonally ponded is < ¼ total area of wetland — points = 0 NOTE: *See text for indicators of seasonal and permanent inundation..*	2
D	**Total for D 1** *Add the points in the boxes above*	13
D	**D 2. Does the wetland have the opportunity to improve water quality?** *(see p. 44)* Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants.* — Grazing in the wetland or within 150 ft X Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland X A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other _____ YES multiplier is 2 NO multiplier is 1	multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 *Add score to table on p. 1*	26

D	Depressional and Flats Wetlands	Points
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation	
	D 3. Does the wetland have the <u>potential</u> to reduce flooding and erosion? *(see p. 46)*	
D	D 3.1 Characteristics of surface water flows out of the wetland Wetland has no surface water outlet points = 4 Wetland has an intermittently flowing, or highly constricted, outlet (points = 2) Wetland is flat and has no obvious outlet and/or outlet is a small ditch points = 1 Wetland has an unconstricted surface outlet points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet* Marks of ponding are 3 ft or more above the surface points = 7 The wetland is a "headwater" wetland" points = 5 Marks of ponding between 2 ft to < 3 ft from surface points = 5 Marks are at least 0.5 ft to < 2 ft from surface (points = 3) Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	3
D	D 3.3 Contribution of wetland to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland itself.* The area of the basin is less than 10 times the area of wetland points = 5 The area of the basin is 10 to 100 times the area of the wetland (points = 3) The area of the basin is more than 100 times the area of the wetland points = 0 Wetland is in the FLATS class (basin = the wetland, by definition) points = 5	3
D	**Total for D 3** *Add the points in the boxes above*	8
D	**D 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** *(see p. 49)* Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other _____ (YES) multiplier is 2 NO multiplier is 1	multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	16

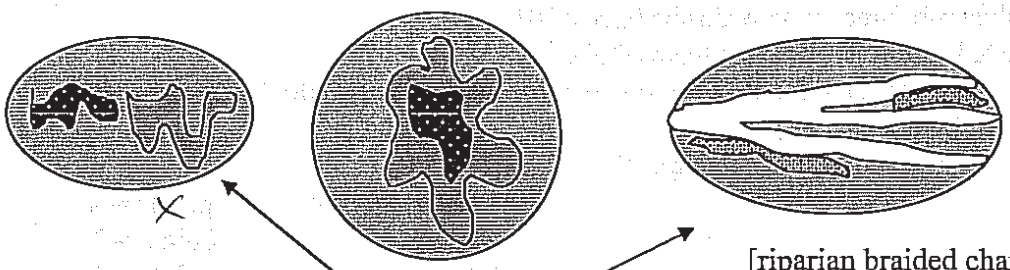
These questions apply to wetlands of all HGM classes.	Points
HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat	
H 1. Does the wetland have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin) if the class covers more than 10% of the area of the wetland or ¼ acre.* ___ Aquatic bed __X__ Emergent plants __X__ Scrub/shrub (areas where shrubs have >30% cover) __X__ Forested (areas where trees have >30% cover) __X__ Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) *Add the number of vegetation types that qualify. If you have:* 4 types or more — points = 4 (circled) 3 types — points = 2 2 types — points = 1 1 type — points = 0	4
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* __X__ Permanently flooded or inundated __X__ Seasonally flooded or inundated __X__ Occasionally flooded or inundated __X__ Saturated only 4 or more types present — points = 3 (circled) 3 types present — points = 2 2 types present — point = 1 __X__ Permanently flowing stream or river in, or adjacent to, the wetland __X__ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points**	3
H 1.3. Richness of Plant Species *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* *List species below if you want to:* If you counted: > 19 species — points = 2 5 - 19 species — points = 1 (circled) < 5 species — points = 0	1

H 1.4. Interspersion of habitats *(see p. 76)*

Decided from the diagrams below whether interspersion between types of vegetation (described in H 1.1), or vegetation types and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



None = 0 points Low = 1 point Moderate = 2 points



X

[riparian braided channels]

High = 3 points

NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".

3

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

X Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

X Standing snags (diameter at the bottom > 4 inches) in the wetland

____ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m)

____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present

X At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*

____ Invasive plants cover less than 25% of the wetland area in each stratum of plants

3

H 1. TOTAL Score - potential for providing habitat
Add the scores in the column above

14

Comments

H 2. Does the wetland have the opportunity to provide habitat for many species?

H 2.1 Buffers *(see p. 80)*

Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. **(relatively undisturbed also means no-grazing)** **Points = 5**

— 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4**

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3**

If buffer does not meet any of the three criteria above

— No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— Heavy grazing in buffer. **Points = 1**

— Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.**

X Buffer does not meet any of the criteria above. **Points = 1**

/

H 2.2 Corridors and Connections *(see p. 81)*

H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*).

YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2

H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above?

YES = **2 points** (*go to H 2.3*) NO = H 2.2.3

0

H 2.2.3 Is the wetland:

within 5 mi (8km) of a brackish or salt water estuary OR
within 3 mi of a large field or pasture (>40 acres) OR
within 1 mi of a lake greater than 20 acres?

YES = **1 point** NO = **0 points**

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)*

Which of the following priority habitats are within 330ft (100m) of the wetland?
(see text for a more detailed description of these priority habitats)

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

____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

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

____ **Old-growth forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age.

____ **Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____ **Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.

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

____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages

____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____ **Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5% during the period of average annual low flow. Includes both estuaries and lagoons.

_____ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** (circled) No habitats = 0 points

1

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed (points = 3) The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores in the column above*	5
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	19

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT 405 Project S. Renton
Date: 12/29/04
Applicant/owner: WSDOT
County: Kin
State: WA
Investigator(s): A. Merrill
S/T/R: 30/23 N/5E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID: Cpland
Transect ID:
Plot ID: SR 167 DSL4LA

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Phalaris arundinacea	H	100	FACW				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC X

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation ____
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations X
Wetland plant database ____
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
Dominant plant is FACW

HYDROLOGY

Is it the growing season? yes (no)
Based on: ____ soil temp (record temp ____)
Time of year other (explain)

Dept. of inundation: — inches
Depth to free water in pit: — inches
Depth to saturated soil: 0-2 inches

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Water Marks: yes (no) on ____
Drift Lines: yes (no)
Oxidized Root (live roots) Channels <12 in. yes (no)
FAC Neutral: yes no
Sediment Deposits: yes (no)
Drainage Patterns: yes (no)
Local Soil Survey: yes (no)
Water-stained Leaves yes (no)
Other (explain):

Wetland hydrology present? yes (no)
Rationale for decision/Remarks:
Soil saturation in upper layer due to recent heavy rain.
No saturation below 2"

SOILS

Map Unit Name (Series & Phase) Urband land — Drainage Class Variable

Taxonomy (subgroup) NA — Field observations confirm mapped type? Yes (No)

Profile Description						
Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-5	A	10YR 3/3	—	—	Sandy loam	
5-16	B	2.5Y 4/0	—	—	"	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma (=1) matrix
- ____ Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? yes (no)

Rationale for decision/Remarks:

No hydric soil indicators

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no		
Hydric soils present?	yes	(no)	Is the sampling point within a wetland?	yes (no)
Wetland hydrology present?	yes	(no)		

Rationale/Remarks:



2 wetland criteria not met.

NOTES:

DP A is located east of wetland 2SL, just adjacent SR 167, near S end of wetland.

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT 405 Project – S. Renton — Date: 12/29/04

Applicant/owner: WSDOT ("The Key" property). — County: King — State: WA

Investigator(s): A. Merrill — S/T/R: 30/23N/5E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID:
Transect ID:
Plot ID: SR 167-21.25L-B

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Phalaris arundinacea	H	90	FACW				
Cirsium vulgare	H	5	FACU				
Rubus discolor	S	20	FACU				
Thuja plicata (planted)	T	15	FAC				
Cornus stolonifera	S	25	FACW				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 67

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation X
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations ____
Wetland plant database X
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
2 of 3 dominants are FACW

HYDROLOGY

Is it the growing season? yes (no)

Based on: ____ soil temp (record temp ____)
time of year other (explain)

Dept. of inundation: — inches
Depth to free water in pit: 16 inches
Depth to saturated soil: surface inches

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Water Marks: yes (no) on ____
Drift Lines: yes (no)
Oxidized Root (live roots) Channels <12 in. yes (no)
FAC Neutral: yes no
Sediment Deposits: yes (no)
Drainage Patterns: (yes) no
Local Soil Survey: yes (no)
Water-stained Leaves (yes) no
Other (explain):

Wetland hydrology present? (yes) no
Rationale for decision/Remarks:
Soil saturated to surface.

SOILS

Map Unit Name (Series & Phase) Urbanland

Drainage Class variable

Taxonomy (subgroup) NA

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-9	A	10YR 3/2			8 sandy clay loam w/ cobbles	
9-16	B	10YR 4/2	10YR 5/8		" "	

Hydric Soil Indicators: (check all that apply)

_____ Histosol
_____ Histic Epipedon
_____ Sulfidic Odor
_____ Aquic Moisture Regime
_____ Reducing Conditions
_____ Gleyed or Low-Chroma (=1) matrix
_____ Matrix chroma ≤ 2 with mottles
_____ Mg or Fe Concretions
_____ High Organic Content in Surface Layer of Sandy Soils
_____ Organic Streaking in Sandy Soils
_____ Listed on National/Local Hydric Soils List
_____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:

Chroma of 2 w/ mottles present

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no			
Hydric soils present?	(yes)	no	Is the sampling point within a wetland?	(yes)	no
Wetland hydrology present?	(yes)	no			

Rationale/Remarks:

All 3 wetland criteria met.

NOTES:

DP B is located in wetland 25R, adjacent to wood ROW fence, on Keg Restaurant property. Plot is located near western boundary; wetland is associated with a ditch (recently dredged). Part of Panther wetland complex.

Revised 4/97

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT 405 Project S. Renton
Applicant/owner: WSDOT
Investigator(s): SK, AM
Date: 12/30/04
County: King
State: WA
S/T/R: 30/23/5E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID: wetland
Transect ID:
Plot ID: SR 167 - 25L-C

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Salix lucida	S	70	FACW				
Rubus discolor	S	10	FAC				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation X
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations X
Wetland plant database ____
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
Dominant plant is FAC or

HYDROLOGY

Is it the growing season? yes (no)
Based on: ____ soil temp (record temp ____)
time of year other (explain)

Dept. of inundation: ____ inches
Depth to free water in pit: 12 inches
Depth to saturated soil: surface inches

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Water Marks: (yes) no on ____
Drift Lines: yes (no)
Oxidized Root (live roots) Channels <12 in. yes (no)
FAC Neutral: yes no
Sediment Deposits: (yes) no
Drainage Patterns: (yes) no
Local Soil Survey: (yes) no
Water-stained Leaves (yes) no
Other (explain):

Wetland hydrology present? (yes) no
Rationale for decision/Remarks:
Several hydrology indicators are present. Areas of standing water are present nearby.

SOILS

Map Unit Name (Series & Phase) Tukwila muck

Drainage Class very poorly drained

Taxonomy (subgroup) Cumnic Medisaprists

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-7	A	10YR 2/2	—	—	Gravelly sandy loam	
7-16+	B	10YR 3/2	—	—	Gravelly sandy loam	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- X Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma (=1) matrix
- ____ Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks: No mottles or low-chroma matrix observed; however, aquic moisture regime is present. Soil may be still that has yet to develop hydric features.

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no		
Hydric soils present?	(yes)	no	Is the sampling point	(yes) no
Wetland hydrology present?	(yes)	no	within a wetland?	

Rationale/Remarks:

All 3 wetland criteria are present.

NOTES:

Data plot C is located in wetland 25L, in a stand of young pacific willow. Petroleum pipeline is located just N, and SR 167 culvert is located to the south.

DATA FORM 1 ***(Revised)***
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT 405 Project S. Renton
Applicant/owner: WSDOT
Investigator(s): AM, IL
Date: 3/1/05
County: King
State: WA
S/T/R: 30/23N/5E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID: upland
Transect ID:
Plot ID: 25L-Y · — A

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Phalaris arundinacea	H	100	FACW				
Daucus carota	H	5	NL				
Rubus discolor	S	5	FACU				
Cytisus scoparius	S	5	NL				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation ____
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations
Wetland plant database X
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? (yes) **no**
Rationale for decision/Remarks:
Dominant plant is FACW

HYDROLOGY

Is it the growing season? (yes) no
Based on: ____ soil temp (record temp ____)
time of year other (explain)

Dept. of inundation: — inches
Depth to free water in pit: — inches
Depth to saturated soil: — inches

Water Marks: yes (no) on ____
Drift Lines: yes (no)
Sediment Deposits: yes (no)
Drainage Patterns: yes (no)
Oxidized Root (live roots) Channels <12 in. yes (no)
Local Soil Survey: (yes) no
FAC Neutral: yes no
Water-stained Leaves yes (no)

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? yes (no)
Rationale for decision/Remarks:
Soils are moist; however, this is probably due to recent rains. No evidence of wetland hydrology observed

SOILS

Map Unit Name (Series & Phase) Tukwila muck

Drainage Class very poorly drained

Taxonomy (subgroup) Limnic Medisaprists

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-7		10YR 3/2			Sandy loam w/gravels & fill material	
7+		repeated refusal (suspected concrete fill)				

Hydric Soil Indicators: (check all that apply)

_____ Histosol
_____ Histic Epipedon
_____ Sulfidic Odor
_____ Aquic Moisture Regime
_____ Reducing Conditions
_____ Gleyed or Low-Chroma (=1) matrix
_____ Matrix chroma ≤ 2 with mottles
_____ Mg or Fe Concretions
_____ High Organic Content in Surface Layer of Sandy Soils
_____ Organic Streaking in Sandy Soils
_____ Listed on National/Local Hydric Soils List
_____ Other (explain in remarks)

Hydric soils present? yes (no)

Rationale for decision/Remarks:

No hydric soil indicators

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no		
Hydric soils present?	yes	(no)	Is the sampling point	yes (no)
Wetland hydrology present?	yes	(no)	within a wetland?	

Rationale/Remarks:

2 wetland criteria not met.

NOTES:

DP- A is located west of wetland 25L-Y, on Younker property. Area has been disturbed/filled. Soils ~~consist~~ consist of fill material/ concrete rubble. Area may pond during ~~heavy~~ heavy rains due to soil compaction. However, hydric soil indicators not observed. Vegetative community is typical of disturbed area.

Revised 4/97

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT 405 Project S, Renton
Date: 3/1/05
Applicant/owner: KCDOT
County: King
State: WA
Investigator(s): IL, AM
S/T/R: 20/23N/5E,

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

Community ID: upland
Transect ID:
Plot ID: 25L-Y -B

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Phalaris arundinacea	H	30	FACW				
Daucus carota	H	60	NL				
Dipsacus fallonum	H	5	NI				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 50

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation ____
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations ____
Wetland plant database ____
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
FAC or wetter plants are not dominant

HYDROLOGY

Is it the growing season? (yes) no

Based on: ____ soil temp (record temp ____)
time of year ____ other (explain)

Water Marks: yes (no) on ____
Drift Lines: yes (no)
Sediment Deposits: yes (no)
Drainage Patterns: yes (no)

Dept. of inundation: ~ inches
Depth to free water in pit: ~ inches
Depth to saturated soil: ~ inches

Oxidized Root (live roots) Channels <12 in. yes (no)
FAC Neutral: yes no
Local Soil Survey: (yes) no
Water-stained Leaves yes (no)

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? yes (no)
Rationale for decision/Remarks:
No saturated soils observed. Area is topographically higher than wetland.

SOILS

Map Unit Name (Series & Phase) Tukwila muck

Drainage Class very poorly drained

Taxonomy (subgroup) Typic Medisaprists

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-10	A	10YR 3/2			sandy loam w/ gravels (fill)	
10+	repeated	refusal				

Hydric Soil Indicators: (check all that apply)

_____ Histosol
_____ Histic Epipedon
_____ Sulfidic Odor
_____ Aquic Moisture Regime
_____ Reducing Conditions
_____ Gleyed or Low-Chroma (=1) matrix
_____ Matrix chroma ≤ 2 with mottles
_____ Mg or Fe Concretions
_____ High Organic Content in Surface Layer of Sandy Soils
_____ Organic Streaking in Sandy Soils
_____ Listed on National/Local Hydric Soils List
_____ Other (explain in remarks)

Hydric soils present? yes (no)

Rationale for decision/Remarks:

No hydric soil indicators observed

Wetland Determination (circle)

Hydrophytic vegetation present?	yes	no			
Hydric soils present?	yes	no	Is the sampling point	yes	no
Wetland hydrology present?	yes	no	within a wetland?		

Rationale/Remarks:

No wetland criteria met.

NOTES:

DP B is located west of wetland 25L-Y, on Younker property. Plot is located approximately 60' east of DP A, on plateau-like area. DP B is approximately 12' higher in elevation than DP A. Plateau area appears to have been created by dumping fill material; perhaps old building pad?

Revised 4/97

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: I-405 S. Renton Nickel	Date: 3/1/05
Applicant/owner: WSDOT	County: King
Investigator(s): AM, IL	State: WA S/T/R: 30/23N/5E
Do Normal Circumstances exist on the site? (yes) no Is the site significantly disturbed (atypical situation)? yes (no) Is the area a potential Problem Area? yes (no) Explanation of atypical or problem area:	Community ID: Wetland Transect ID: Plot ID: DP 25L-Y -C

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Phalaris arundinacea	H	40	FACW	Salix sp	S	10	
Cirsium arvense vulgare	H	2	FAC-				
Populus balsamifera	S	60	FAC				
Dipsacus fullonum	H	10	NI				
Daucus Carota	H	10	NL				
Salix sitchensis	S	30	FACW				

Fossil carrot

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100%

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	____	Physiological/reproductive adaptations	____
		Wetland plant database	X
Morphological adaptations	____	Personal knowledge of regional plant communities	____
Technical Literature	____	Other (explain)	____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
More than 50% of dominants are OBL, FACW, or FAC.

HYDROLOGY

Is it the growing season? (yes) no

Based on: ____ soil temp (record temp ____)
DATE other (explain)

Water Marks: yes (no) on ____		Sediment Deposits: yes (no)	
Drift Lines: yes (no)		Drainage Patterns: yes (no)	
Dept. of inundation: — inches	Oxidized Root (live roots) Channels <12 in. yes (no)	Local Soil Survey: (yes) no	
Depth to free water in pit: 11 inches	FAC Neutral: (yes) no	Water-stained Leaves (yes) no	
Depth to saturated soil: 0 inches			

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? (yes) no
Rationale for decision/Remarks:
Soils saturated and free water in pit; standing water nearby.

SOILS

Map Unit Name (Series & Phase): Tukwila muck

Drainage Class: very poorly drained

Taxonomy (subgroup): Limnic Medisaprists

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-6	A	2.5YR 3/2	—	—	gravelly sandy loam	
6-16+	B	2.5YR 3/2	7.5Y 4/6	distinct few	gravelly sandy loam	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- X Gleyed or Low-Chroma (=1) matrix
- X Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:
Soils contain low chroma & mottles.

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no			
Hydric soils present?	(yes)	no	Is the sampling point within a wetland?	(yes)	no
Wetland hydrology present?	(yes)	no			

Rationale/Remarks:

All three criteria are met.

NOTES: DP-C TS located in POBA / Salix sp. sapling dominated area - west of westernmost berm. Area of TS approx 10' lower in elev. than plateau (DP-B). Area disturbed, but appears to be gradually exhibiting wetland characteristics (emerging hydro. vegetation, high groundwater levels & hydric indicators). Soils very different from DP-A & B. Emerging PSS wetland connected by ditch along northern property boundary to long narrow PFO along SR 167 - WL.

Revised 4/97

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Maunal or
1987 Corps Wetland Delineation Manual)

Project/Site: I-405 S. RENTON NICKEL	Date: 3/1/05
Applicant/owner: WSDOT	County: KING
	State: WA
Investigator(s): BM, IL	S/T/R: 30/23N/5E
Do Normal Circumstances exist on the site? (yes) no	Community ID: UPLAND
Is the site significantly disturbed (atypical situation)? yes (no)	Transect ID:
Is the area a potential Problem Area? yes (no)	Plot ID: DP-25L-V-D
Explanation of atypical or problem area:	

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Festuca arundinacea	H	30	FACU				
Poa sp.	H	30	FAC				
Populus balsamifera	S	30	FAC				
Salix lucida	S	15	FACW				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 67%

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	____	Physiological/reproductive adaptations	____
		Wetland plant database	____
Morphological adaptations	____	Personal knowledge of regional plant communities	____
Technical Literature	____	Other (explain)	____

Hydrophytic vegetation present? (yes) no

Rationale for decision/Remarks:
More than 50% of dominants are OBL, FACW, or FAC

HYDROLOGY

Is it the growing season? (yes) no

Based on: ____ soil temp (record temp ____)
DATE other (explain)

Dept. of inundation:	— inches	Water Marks: yes (no) on ____	Sediment Deposits: yes (no)
		Drift Lines: yes (no)	Drainage Patterns: yes (no)
Depth to free water in pit:	7 inches	Oxidized Root (live roots) Channels <12 in. yes (no)	Local Soil Survey: (yes) no
Depth to saturated soil:	0 inches	FAC Neutral: yes (no) *	Water-stained Leaves yes (no)

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? (yes) no

Rationale for decision/Remarks:
Soils saturated and free water within 12" during early growing season.

SOILS

Map Unit Name (Series & Phase) Tulemile muck

Drainage Class very poorly drained

Taxonomy (subgroup) Limnic Medisaprists

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-5	A	10YR 3/2	-	-	Sandy loam	
5-10	B	10YR 3/2	-	-	sand + gravel	
.	Sub dominant matrix	2.5Y 5/2	-	-	"	
10+	repeated refusal	- filled area - piles of concrete nearby.				

Hydric Soil Indicators: (check all that apply)

_____ Histosol
_____ Histic Epipedon
_____ Sulfidic Odor
_____ Aquic Moisture Regime
_____ Reducing Conditions
_____ Gleyed or Low-Chroma (=1) matrix
_____ Matrix chroma ≤ 2 with mottles
_____ Mg or Fe Concretions
_____ High Organic Content in Surface Layer of Sandy Soils
_____ Organic Streaking in Sandy Soils
_____ Listed on National/Local Hydric Soils List
_____ Other (explain in remarks)

Hydric soils present? yes (no)

Rationale for decision/Remarks:
Soil does not contain hydric indicators.

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no		
Hydric soils present?	yes	(no)	Is the sampling point within a wetland?	yes (no)
Wetland hydrology present?	(yes)	no		

Rationale/Remarks:
Only 2 of 3 criteria are met. Area has not developed hydric soils.

NOTES: DP-D located between the two berms in northern third of site. Area is upland island in wetland consisting of the easternmost berm and this area of remaining gravel fill. ~~Area~~ Pile of concrete rubble w/ monitor well present (10' diam). Area possibly excavated between berms, some of the area already exhibits wetland characteristics ~~(one criteria met)~~ (all criteria met) and other areas developing.

Revised 4/97

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: I-405 S. RENTON NICKEL	Date: 3/1/05
Applicant/owner: WSDOT	County: KING
Investigator(s): AM, JL	State: WA S/T/R: 30/23N/5E
Do Normal Circumstances exist on the site? (yes) no Is the site significantly disturbed (atypical situation)? yes (no) Is the area a potential Problem Area? yes (no) Explanation of atypical or problem area:	Community ID: — Transect ID: Plot ID: DP-25L-Y-E

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Dipsacus fullonum (fused)	H	50	NI				
Phalaris arundinacea	H	30	FACW				
Agrostis sp	H	30	FAC				
Populus balsamifera	S	10	FAC				
Salix sp.	S	5	FACW				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 67%

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	____	Physiological/reproductive adaptations	____
Morphological adaptations	____	Wetland plant database	X
Technical Literature	____	Personal knowledge of regional plant communities	____
		Other (explain)	____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
More than 50% of dominants are OBL, FACW, or FAC.

HYDROLOGY

Is it the growing season? (yes) no Based on: ____ soil temp (record temp ____) DATE other (explain)	Water Marks: yes (no) on ____	Sediment Deposits: yes (no)
	Drift Lines: yes (no)	Drainage Patterns: yes (no)
Dept. of inundation: ____ inches	Oxidized Root (live roots) Channels <12 in. yes (no)	Local Soil Survey: (yes) no
Depth to free water in pit: 7 inches Depth to saturated soil: 0 inches	FAC Neutral: yes no	Water-stained Leaves yes (no)
Check all that apply & explain below: Stream, Lake or gage data: ____ Aerial photographs: ____ Other: ____	Other (explain):	

Wetland hydrology present? (yes) no
Rationale for decision/Remarks:
Soils saturated and free water present during early portion of growing season.

SOILS

Map Unit Name (Series & Phase) Tukwila muck

Drainage Class very poorly drained

Taxonomy (subgroup) Limnic Medisaprists

Field observations confirm mapped type? Yes (No)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-4	A	2.5Y 3/2	-	-	Gravelly Sandy loam	
4-10	B	2.5Y 3/2	7.5YR 4/4	distinct medium common	Gravelly Sandy loam	
10+	repeated refusal				too compact	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma (=1) matrix
- X Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:

Soil contains low chroma and mottles in root zone.

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no			
Hydric soils present?	(yes)	no	Is the sampling point within a wetland?	(yes)	no
Wetland hydrology present?	(yes)	no			

Rationale/Remarks:

All three criteria are met.

NOTES: DP-E is located near ~~a~~ an indistinct upland / wetland transition ~~of~~ between areas that have are disturbed fill and areas w/ fill removed possibly. Vegetation is also marginal, ranging from 50 to 67% dominants being hydrophytic.

Revised 4/97

DRAFT WETLAND RATING FORM – WESTERN WASHINGTON

Name of wetland (if known): WETLAND 25L

Location: SEC: 30 TWNSHP: 23N RNGE: 5E (attach map with outline of wetland to rating form)
WSDOT 405 Project

Person(s) Rating Wetland: A. Merrill Affiliation: S. Renton Date of site visit: 12/29/04

DRAFT SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III X IV___

Category I = Score >70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	22
Score for Hydrologic Functions	10
Score for Habitat Functions	15
TOTAL score for functions	47

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ **Does not Apply** X

Final Category (choose the "highest" category from above) III

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X		

Does the wetland being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
SP1. *Has the wetland been documented as a habitat for any Federally listed Threatened or Endangered plant or animal species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland been documented as habitat for any State listed Threatened or Endangered plant or animal species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database.		X
SP3. *Does the wetland contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

Wetland Name: WL 25L **Date:** 12/29/04

1. Are the water levels in the wetland usually controlled by tides (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. Is the topography within the wetland flat and precipitation is only source (>90%) of water to it.
NO – go to 3 **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the wetland **meet both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) where at least 20 acres (8 ha) are permanently inundated (ponded or flooded);
___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the wetland **meet all** of the following criteria?
____The wetland is on a slope (*slope can be very gradual*),
____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
____The water leaves the wetland **without being impounded**?
NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks(depressions are usually <3ft diameter and less than 1 foot deep).*
NO – go to 5 **YES** – The wetland class is **Slope**

5. Is the wetland in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river? The flooding should occur at least once every two years, on the average, to answer "yes." *The wetland can contain depressions that are filled with water when the river is not flooding.*
NO - go to 6 **YES** – The wetland class is **Riverine**

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

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

7. Is the wetland located in a very flat area with no obvious depression and no stream or river running through it and providing water. The wetland seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

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

8. Your wetland seems to be difficult to classify. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. Sometimes we find characteristics of several different hydrogeomorphic classes within one wetland boundary. Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland being rated. If the area of the second class is less than 10% classify the wetland using the first class.

HGM Classes Within a Delineated Wetland Boundary	*Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

D	Depressional and Flats Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
D	**D 1. Does the wetland have the potential to improve water quality?** *(see p. 38)*	
D	D 1.1 Characteristics of surface water flows out of the wetland: Wetland is a depression with no surface water outlet — points = 3 Wetland has an intermittently flowing, or highly constricted, outlet — (points = 2) Wetland has an unconstricted surface outlet — points = 1 Wetland is flat and has no obvious outlet and/or outlet is a ditch — points = 1	2
D	D 1.2 The soil 2 inches below the surface is clay, organic, or smells anoxic (hydrogen sulfide or rotten eggs). (YES) — points = 4 NO — points = 0	4
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest class): Wetland has persistent, ungrazed, vegetation >= 95% of area — points = 5 Wetland has persistent, ungrazed, vegetation >= 1/2 of area — (points = 3) Wetland has persistent, ungrazed vegetation >= 1/10 of area — points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area — points = 0	3
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland — points = 4 Area seasonally ponded is > ¼ total area of wetland — (points = 2) Area seasonally ponded is < ¼ total area of wetland — points = 0 NOTE: *See text for indicators of seasonal and permanent inundation..*	2
D	**Total for D 1** *Add the points in the boxes above*	11
D	**D 2. Does the wetland have the opportunity to improve water quality?** *(see p. 44)* Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants.* — Grazing in the wetland or within 150 ft X Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland X A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ (YES) multiplier is 2 NO multiplier is 1	multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	22

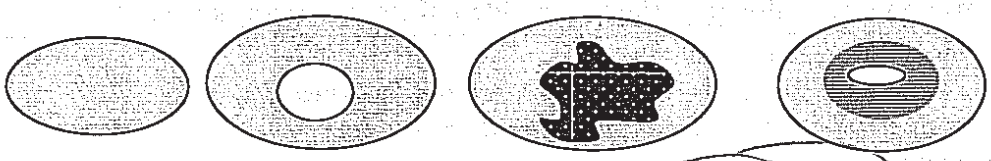
not observed in soil plots; however, soil is mapped as Tukwila muck. Soils under ponded water were not sampled.

D	Depressional and Flats Wetlands	Points
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation	
	D 3. Does the wetland have the potential to reduce flooding and erosion? *(see p. 46)*	
D	D 3.1 Characteristics of surface water flows out of the wetland Wetland has no surface water outlet — points = 4 Wetland has an intermittently flowing, or highly constricted, outlet — points = 2 Wetland is flat and has no obvious outlet and/or outlet is a small ditch — points = 1 Wetland has an unconstricted surface outlet — points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet* Marks of ponding are 3 ft or more above the surface — points = 7 The wetland is a "headwater" wetland" — points = 5 Marks of ponding between 2 ft to < 3 ft from surface — points = 5 Marks are at least 0.5 ft to < 2 ft from surface — points = 3 Wetland is flat but has small depressions on the surface that trap water — points = 1 Marks of ponding less than 0.5 ft — points = 0	3
D	D 3.3 Contribution of wetland to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland itself.* The area of the basin is less than 10 times the area of wetland — points = 5 The area of the basin is 10 to 100 times the area of the wetland — points = 3 The area of the basin is more than 100 times the area of the wetland — points = 0 Wetland is in the FLATS class (basin = the wetland, by definition) — points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	5
D	**D 4. Does the wetland have the opportunity to reduce flooding and erosion?** *(see p. 49)* Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems X Wetland drains to a river or stream that has flooding problems or X Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other _____ **YES** multiplier is 2 **NO** multiplier is 1	multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 *Add score to table on p. 1*	10

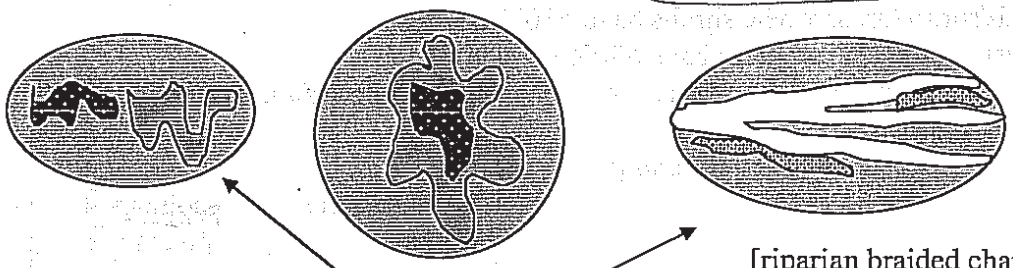
These questions apply to wetlands of all HGM classes.	Points
HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat	
H 1. Does the wetland have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin) if the class covers more than 10% of the area of the wetland or ¼ acre.* ___ Aquatic bed __X__ Emergent plants __X__ Scrub/shrub (areas where shrubs have >30% cover) __X__ Forested (areas where trees have >30% cover) ____ Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) *Add the number of vegetation types that qualify. If you have:* 4 types or more — points = 4 3 types — points = 2 2 types — points = 1 1 type — points = 0	2
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* __X__ Permanently flooded or inundated __X__ Seasonally flooded or inundated ____ Occasionally flooded or inundated __X__ Saturated only ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ ***Lake-fringe wetland*** **= 2 points** ____ ***Freshwater tidal wetland*** **= 2 points** 4 or more types present — points = 3 3 types present — points = 2 2 types present — point = 1	2
H 1.3. Richness of Plant Species *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* *List species below if you want to:* If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	1

H 1.4. Interspersion of habitats *(see p. 76)*

Decided from the diagrams below whether interspersion between types of vegetation (described in H 1.1), or vegetation types and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



None = 0 points Low = 1 point Moderate = 2 points



[riparian braided channels]

High = 3 points

NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".

2

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

X Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

X Standing snags (diameter at the bottom > 4 inches) in the wetland

____ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m)

____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present

X At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)*

____ Invasive plants cover less than 25% of the wetland area in each stratum of plants

3

H 1. TOTAL Score - potential for providing habitat
Add the scores in the column above

10

Comments

H 2. Does the wetland have the opportunity to provide habitat for many species?

H 2.1 Buffers *(see p. 80)*

Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. **(relatively undisturbed also means no-grazing)** **Points = 5**

— 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4**

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3**

If buffer does not meet any of the three criteria above

— No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— Heavy grazing in buffer. **Points = 1**

— Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0**

X — Buffer does not meet any of the criteria above. **Points = 1**

1

H 2.2 Corridors and Connections *(see p. 81)*

H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*).

YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2

H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above?

YES = **2 points** (*go to H 2.3*) NO = H 2.2.3

H 2.2.3 Is the wetland:

within 5 mi (8km) of a brackish or salt water estuary OR
within 3 mi of a large field or pasture (>40 acres) OR
within 1 mi of a lake greater than 20 acres?

YES = **1 point** NO = **0 points**

0

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)*

Which of the following priority habitats are within 330ft (100m) of the wetland?
(see text for a more detailed description of these priority habitats)

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

____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

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

____ **Old-growth forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age.

____ **Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____ **Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.

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

____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages

____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____ **Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5% during the period of average annual low flow. Includes both estuaries and lagoons.

____ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** (circled) No habitats = 0 points

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores in the column above*	5
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	15

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual) 25,5L

Project/Site: ~~[illegible]~~	Date: 9/28/06
Applicant/owner: WSDOT	County: King
Investigator(s): Pursley, Douglas	State: WA
	S/T/R: 31/23N/5E
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community ID:
Is the site significantly disturbed (atypical situation)? ☑ Yes ☐ No	Transect ID:
Is the area a potential problem area? ☐ Yes ☑ No	Plot ID: 25,5L #2 up
Explanation of atypical or problem area: Upland on fill	

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
RUPE	S	90	FACU				
PHAR	H	40	FACW				

HYDROPHYTIC VEGETATION INDICATORS: S= 0/90=0

% of dominants OBL, FACW, & FAC: = 40/90=31% H= 40/40=100%

Check all indicators that apply and explain below:

- ☐ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☑ Wetland plant database
- ☑ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale for decision/Remarks: 31% Dom Wet Veg

HYDROLOGY

Is it the growing season? ☑ Yes ☐ No	Water Marks: ☐ Yes ☑ No on	Sediment Deposits: ☐ Yes ☑ No
Based on: ☐ Soil temp (record temp) ☑ Other (explain) September	Drift Lines: ☐ Yes ☑ No	Drainage Patterns: ☐ Yes ☑ No
Depth of inundation: 0 inches	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☑ No	Local Soil Survey: ☐ Yes ☑ No
Depth to free water in pit: 0	FAC Neutral: ☐ Yes ☑ No	Water-stained Leaves: ☐ Yes ☑ No
Depth to saturated soil: 0		
Check all that apply & explain below: ☐ Stream, lake or gage data ☐ Aerial photographs ☐ Other	Other (explain):	

Wetland hydrology present? ☐ Yes ☑ No

Rationale for decision/remarks: No Hydric indicators

SOILS

Map Unit Name (Series and Phase): Snohomish silt loam,

Drainage Class

Field observations confirm mapped type? ☑ Yes ☐ No

Taxonomy (subgroup) Tukwila muck, Puget silty clay loam



Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-18+		Fill/Angular rock				

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☐ Yes ☑ No

Rationale for decision/Remarks: Fill material w/ Angular rock & gravel

Wetland Determination

Hydrophytic vegetation present?	☐ Yes	☑ No
Hydric soils present?	☐ Yes	☑ No
Wetland hydrology present?	☐ Yes	☑ No
Is the sampling point within a wetland?	☐ Yes	☑ No

Rationale/Remarks: 0 of 3 parameters

NOTES:

Revised 4/97

14 flags

Routine Wetland Determination

DATA FORM 1 *(Revised)*

25.5C

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: TRIB Applicant/owner: WSDOT Investigator(s): Pursley, Douglas	Date: 9/28/06 County: King State: WA S/T/R: 31/23N/5E
Do normal circumstances exist on the site? ☑ Yes ☐ No Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No Is the area a potential problem area? ☐ Yes ☑ No Explanation of atypical or problem area:	Community ID: Transect ID: Plot ID: SP#2

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
SALAS	T	100	FACW+				
SPDO	S	40	FACW				
CORSER	S	40	FACW				
Herb SPIWAS	H	20	FACW-				
PHAR	H	10	FACW				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC: 180/200 = 90%

T = 100/100 = 100%
S = 80/80 = 100%
H = 0/20 = 0%

Check all indicators that apply and explain below:

- ☐ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☑ Wetland plant database
- ☑ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale for decision/Remarks: 90% Dom Wet Veg

HYDROLOGY

Is it the growing season? ☑ Yes ☐ No

Based on: ☐ Soil temp (record temp) ☑ Other (explain) September

Depth of inundation: 0 inches

Depth to free water in pit: 0 - 18"

Depth to saturated soil: @ Surface

	Water Marks: ☐ Yes ☑ No on	Sediment Deposits: ☐ Yes ☑ No
	Drift Lines: ☐ Yes ☑ No	Drainage Patterns: ☐ Yes ☑ No
	Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☑ No	Local Soil Survey: ☐ Yes ☑ No
	FAC Neutral: ☐ Yes ☑ No	Water-stained Leaves: ☑ Yes ☐ No

Check all that apply & explain below:

- ☐ Stream, lake or gage data
- ☐ Aerial photographs
- ☐ Other

Other (explain):

Wetland hydrology present? ☑ Yes ☐ No

Rationale for decision/remarks: Saturated @ Surface

SOILS

Map Unit Name (Series and Phase): Snohomish silt loam, Tukwila muck, Puget silt clay loam

Drainage Class

Field observations confirm mapped type? ☑ Yes ☐ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-19"		10YR 3/1	—	—	Loam	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☑ Yes ☐ No

Rationale for decision/Remarks:

Wetland Determination

Hydrophytic vegetation present?	☑ Yes	☐ No
Hydric soils present?	☑ Yes	☐ No
Wetland hydrology present?	☑ Yes	☐ No
Is the sampling point within a wetland?	☑ Yes	☐ No

Rationale/Remarks: 3 of 3 parameters

NOTES:

Revised 4/97

Wetland name or number 25,5L

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 25,5L Date of site visit: 9/28/06

Rated by: Douglas, Russley Trained by Ecology? Yes____ No ✓ Date of training: —

SEC: 31 TWNSHP: 23N RNGE: 5E Is S/T/R in Appendix D? Yes____ No ✓

Map of wetland unit: Figure____ **Estimated size** 6

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I____ **II**____ **III** X **IV**____

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	18
Score for Hydrologic Functions	10
Score for Habitat Functions	16
TOTAL Score for Functions	44

Category based on SPECIAL CHARACTERISTCS of Wetland I____ **II**____ **Does not apply** ✓

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics	
Estuarine	
Natural Heritage Wetland	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	

Wetland HGM Class used for Rating	
Depressional	✓
Riverine	
Lake-fringe	
Slope	
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	✓

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		✓

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number 25,5L

Classification of Vegetated Wetlands for Western Washington

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

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   _____ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   _____ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   _____ The wetland is on a slope *(slope can be very gradual)*.
   _____ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   _____ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   _____ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   _____ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional ✓
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

Wetland name or number 25.52

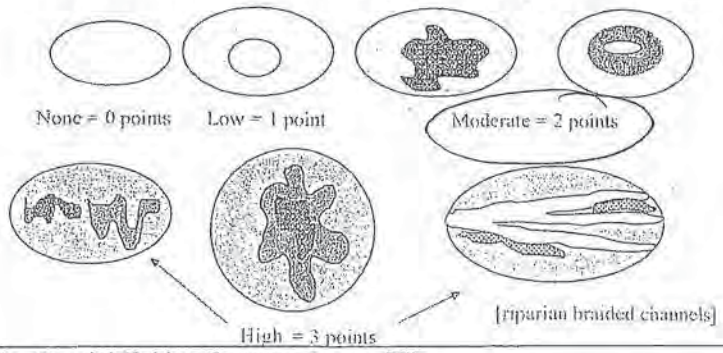
D	Depressional and Flat Wetlands	Points (only 1 score per box)
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	*(see p.38)*
D 1	**Does the wetland have the potential to improve water quality?**	
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) ..... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet ..... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) ..... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch ..... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	Figure ___ 2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) **YES** points = 4 **NO** points = 0	
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area ..... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area ..... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area ..... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area ..... points = 0 **Map of Cowardin vegetation classes**	Figure ___ 3
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland ..... points = 4 • Area seasonally ponded is > 1/4 total area of wetland ..... points = 2 • Area seasonally ponded is < 1/4 total area of wetland ..... points = 0 **Map of Hydroperiods**	Figure ___ 4
	Total for D 1 *Add the points in the boxes above*	9
D 2	**Does the wetland have the opportunity to improve water quality?** *(see p. 44)* Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ___ Grazing in the wetland or within 150 ft X Untreated stormwater discharges to wetland ___ Tilled fields or orchards within 150 ft. of wetland X A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging X Residential, urban areas, golf courses are within 150 ft. of wetland ___ Wetland is fed by groundwater high in phosphorus or nitrogen ___ Other ___ **YES** multiplier is 2 **NO** multiplier is 1	Multiplier 2
◆	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	18
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the potential to reduce flooding and erosion?** *(see p.46)*	
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) ..... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet ..... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch ..... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* ..... points = 0	2
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet ..... points = 7 • The wetland is a "headwater" wetland ..... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet ..... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet ..... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft ..... points = 0	3
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit ..... points = 5 • The area of the basin is 10 to 100 times the area of the unit ..... points = 3 • The area of the basin is more than 100 times the area of the unit ..... points = 0 • Entire unit is in the FLATS class ..... points = 5	0
	Total for D 3 *Add the points in the boxes above*	5
D 4	**Does the wetland have the opportunity to reduce flooding and erosion?** *(see p. 49)* Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from	Multiplier

Wetland name or number 35,5L

	groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ___ Wetland is in a headwater of a river or stream that has flooding problems. __X__ Wetland drains to a river or stream that has flooding problems ___ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ___ Other **YES** multiplier is 2 **NO** multiplier is 1	2
◆	**TOTAL – Hydrologic Functions** Multiply the score from D3 by D4; then ***add score to table on p. 1***	10

Comments:

Wetland name or number 25,5L

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.		Points (only 1 score per box)
H 1	**Does the wetland have the potential to provide habitat for many species?**	
	H 1.1 Vegetation structure *(see P. 72)*: *Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.* ___ Aquatic Bed X Emergent plants X Scrub/shrub (areas where shrubs have > 30% cover) X Forested (areas where trees have > 30% cover) *If the unit has a forested class check if:* ___ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. *Add the number of vegetation types that qualify. If you have:* 4 structures or more.....points = 4 2 structures.....points = 1 **Map of Cowardin vegetation classes** 3 structures.....points = 2 1 structure.....points = 0	Figure ___ 2
	H 1.2 Hydroperiods *(see p.73)*: *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).* ___ Permanently flooded or inundated X Seasonally flooded or inundated X Occasionally flooded or inundated X Saturated only X Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ **Lake-fringe wetland.....= 2 points** ___ **Freshwater tidal wetland.....= 2 points** 4 or more types present points = 3 3 or more types present.....points = 2 2 types present.....points = 1 1 type present.....points = 0 **Map of hydroperiods**	Figure ___ 3
	H 1.3 Richness of Plant Species *(see p. 75)*: Count the number of plant species in the wetland that cover at least 10 ft² *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.* List species below if you want to: If you counted: > 19 species.....points = 2 5 – 19 species.....points = 1 < 5 species.....points = 0	1
	H 1.4 Interspersion of Habitats *(see p. 76)*: Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". **Use map of Cowardin classes.**	Figure ___ 2
	H 1.5 Special Habitat Features *(see p. 77)*: *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* X Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) X Standing snags (diameter at the bottom > 4 inches) in the wetland ___ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) X Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ___ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* X Invasive plants cover less than 25% of the wetland area in each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	4
	H 1 TOTAL Score – potential for providing habitat *Add the points in the column above*	12

Wetland name or number 25,5L

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use).. .....**points = 5** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference.....**points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference.....**points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference.....**points = 3** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference .....**points = 3** **If buffer does not meet any of the criteria above:** ___ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK.....**points = 2** ___ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK.....**points = 2** ___ Heavy grazing in buffer.....**points = 1** ___ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland).....**points = 0** X Buffer does not meet any of the criteria above .....**points = 1** **Arial photo showing buffers**	**Figure** ___
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* **YES = 4 points** (go to H 2.3) **NO** = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? **YES = 2 points** (go to H 2.3) **NO** = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR • Within 1 mile of a lake greater than 20 acres? **YES** = 1 point **NO** = 0 points	Ø

Comments:

Wetland name or number 35,52

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82):
Which of the following priority habitats are within 330 ft. (100m) of the wetland? *NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.*

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

____ **Aspen Stands**: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)

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

____ **Old-growth forests**: (Old growth west of Cascade Crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings, with at least 20 trees/ha (8 trees/acre) > 81cm (32 in) dbh or > 200 years of age.

____ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade Crest.

____ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.

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

____ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages.

____ **Oregon white Oak**: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____ **Estuary/Estuary-like**: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons.

____ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has 3 or more priority habitats .= 4 points If wetland has 1 priority habit ...= 1 point
If wetland has 2 priority habitats .....= 3 points No habitats.....= 0 points
Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. (Nearby wetlands are addressed in question H 2.4).

0

H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)*

- There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development.....points = 5
- The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile .....points = 5
- There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed.....points = 3
- The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile.....points = 3
- There is at least 1 wetland within 1/2 mile .....points = 2
- There are no wetlands within 1/2 mile .....points = 0

3

	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	4
	TOTAL for H 1 from page 8	12
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then *record the result on p. 1*	16

Comments:

Wetland name or number 355L

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ___ The dominant water regime is tidal, ___ Vegetated, and ___ With a salinity greater than 0.5 ppt. **YES** = Go to SC 1.1 **NO** ___	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? **YES** = Category I **NO** = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? **YES** = Category I **NO** = Category II ___ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ___ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ___ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D _____ or accessed from WNHP/DNR web site _____ **YES** _____ Contact WNHP/DNR (see p. 79) and go to SC 2.2 **NO** _____ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? **YES** = Category 1 **NO** _____ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? **YES** = go to question 3 **NO** = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? **YES** = go to question 3 **NO** = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? **YES** = Is a bog for purpose of rating **NO** = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)*? **YES** = Category I **NO** = Is not a bog for purpose of rating	**Cat. I**

Wetland name or number 25.5L

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. **YES** = Category I **NO** = ____ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* **YES** = Go to SC 5.1 **NO** ____ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) **YES** = Category I **NO** = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? **YES** = Go to SC 6.1 **NO** ____ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? **YES** = Category II **NO** = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? **YES** = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered **NO** for all types enter "Not Applicable" on p. 1	NA

Comments:

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT 405 Project S. Renton
Date: 12/30/04
Applicant/owner: WSDOT
County: King
State: WA
Investigator(s): AM, SK
S/T/R: 03/23N/4E
Community ID: upland
Transect ID:
Plot ID: SR 167, DP 25ZL-A

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Agrostis sp.	H	30	FAC				
Phalaris arundinacea	H	30	FACW				
Cirsium vulgare	H	10	FACU				
Rubus discolor	S	40	FACU				
Senecio jacobaea (Tansy ragwort)	H	5	NI				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 67

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation ____
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations X
Wetland plant database ____
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
Majority of dominant plants are FAC or wetter.

HYDROLOGY

Is it the growing season? yes (no)

Based on: ____ soil temp (record temp ____)
Time of year other (explain)

Dept. of inundation: ____ inches
Depth to free water in pit: ____ inches
Depth to saturated soil: ____ inches

Water Marks: yes (no) on ____
Drift Lines: yes (no)
Oxidized Root (live roots) Channels <12 in. yes (no)
FAC Neutral: yes no
Sediment Deposits: yes (no)
Drainage Patterns: yes (no)
Local Soil Survey: yes no
Water-stained Leaves yes (no)

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____

Other (explain):

Wetland hydrology present? yes (no)
Rationale for decision/Remarks:
No saturation in soil pit; no evidence of wetland hydrology.

SOILS

Map Unit Name _____ Drainage Class _____
(Series & Phase)

Taxonomy (subgroup) _____ Field observations confirm mapped type? Yes No

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-11	A	10YR3/2	—	—	Sand & gravel f.i.f	

Hydric Soil Indicators: (check all that apply)

_____ Histosol
_____ Histic Epipedon
_____ Sulfidic Odor
_____ Aquic Moisture Regime
_____ Reducing Conditions
_____ Gleyed or Low-Chroma (=1) matrix
_____ Matrix chroma ≤ 2 with mottles
_____ Mg or Fe Concretions
_____ High Organic Content in Surface Layer of Sandy Soils
_____ Organic Streaking in Sandy Soils
_____ Listed on National/Local Hydric Soils List
_____ Other (explain in remarks)

Hydric soils present? yes (no)

Rationale for decision/Remarks:

No hydric soil indicators observed

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no			
Hydric soils present?	yes	(no)	Is the sampling point within a wetland?	yes	(no)
Wetland hydrology present?	yes	(no)			

Rationale/Remarks:

No wetland criteria not met.

NOTES:

DP A is located S of wetland 23.7L, under electric transmission lines. Area was historically part of a larger wetland complex, but was filled.

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: WSDOT 405 Project S. Renton
Date: 12/30/04
Applicant/owner: WSDOT
County: King
State: WA
Investigator(s): SK; AM
S/T/R: 23/23W/4E
Community ID: wetland
Transect ID:
Plot ID: SR 167 - DP 25.7B

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? yes (no)
Explanation of atypical or problem area:

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Phalaris arundinacea	H	10	FACW				
Rubus discolor	S	10	FACW				
Salix lasiandra	S	60	FAC				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 100

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation X
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations ____
Wetland plant database X
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks:
Dominant plant is FAC

HYDROLOGY

Is it the growing season? yes (no)
Based on: ____ soil temp (record temp ____)
fine of year other (explain)

Dept. of inundation: — inches
Depth to free water in pit: 3 inches
Depth to saturated soil: surface inches

Water Marks: (yes) no on ____
Drift Lines: yes (no)
Sediment Deposits: yes (no)
Drainage Patterns: (yes) no
Oxidized Root (live roots) Channels <12 in. yes (no)
FAC Neutral: yes no
Local Soil Survey: yes no
Water-stained Leaves (yes) no

Check all that apply & explain below:
Stream, Lake or gage data: ____
Aerial photographs: ____ Other: ____
Other (explain):

Wetland hydrology present? (yes) no
Rationale for decision/Remarks:
Free water observed at 3" depth. Large ponded area in center of wetland.

SOILS

Map Unit Name _____ (Series & Phase)

Drainage Class _____

Taxonomy (subgroup) _____

Field observations confirm mapped type? Yes No

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-4	A	10YR 2/1			Sandy silty loam	
4-16	B	10YR 2/1			Sandy loam	

Hydric Soil Indicators: (check all that apply)

_____ Histosol
_____ Histic Epipedon
_____ Sulfidic Odor
_____ Aquic Moisture Regime
_____ Reducing Conditions
__X__ Gleyed or Low-Chroma (=1) matrix
_____ Matrix chroma ≤ 2 with mottles
_____ Mg or Fe Concretions
_____ High Organic Content in Surface Layer of Sandy Soils
_____ Organic Streaking in Sandy Soils
_____ Listed on National/Local Hydric Soils List
_____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks:

Chroma of 1 observed in B layer

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no		
Hydric soils present?	(yes)	no	Is the sampling point within a wetland?	(yes) no
Wetland hydrology present?	(yes)	no		

Rationale/Remarks:

All 3 wetland criteria present.

NOTES:

DP B located near western boundary of Wetland 25.7L. Wetland is PSS, and is located between SR 167 and ___ road. Wetland B was historically part of wetland 25.L before power-line area was filled. Wetland is PFO.

Revised 4/97

DRAFT WETLAND RATING FORM – WESTERN WASHINGTON

Name of wetland (if known): 25.76

Location: SEC: 23 TWNSHP: 23N RNGE: 4E (attach map with outline of wetland to rating form)

Lusrot 405 Project

Person(s) Rating Wetland: A. Merrill Affiliation: C. Renton Date of site visit: 12/30/04

DRAFT SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III X IV___

Category I = Score >70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	14
Score for Hydrologic Functions	10
Score for Habitat Functions	12
TOTAL score for functions	36

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ **Does not Apply** X

Final Category (choose the "highest" category from above) III

Check the appropriate type and class of wetland being rated.

Wetland Type		Wetland Class	
Estuarine		Depressional	X
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	X		

Does the wetland being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
SP1. *Has the wetland been documented as a habitat for any Federally listed Threatened or Endangered plant or animal species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		X
SP2. *Has the wetland been documented as habitat for any State listed Threatened or Endangered plant or animal species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database.		X
SP3. *Does the wetland contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Western Washington

Wetland Name: _____ **Date:** _____

1. Are the water levels in the wetland usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. Is the topography within the wetland flat and precipitation is only source (>90%) of water to it.
   NO – go to 3 **YES** – The wetland class is **Flats**

   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the wetland **meet both** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) where at least 20 acres (8 ha) are permanently inundated (ponded or flooded);
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the wetland **meet all** of the following criteria?
   ____The wetland is on a slope (*slope can be very gradual*),
   ____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   ____The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks(depressions are usually <3ft diameter and less than 1 foot deep).*
   NO - go to 5 **YES** – The wetland class is **Slope**

5. Is the wetland in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river? The flooding should occur at least once every two years, on the average, to answer "yes." *The wetland can contain depressions that are filled with water when the river is not flooding.*
   NO - go to 6 **YES** – The wetland class is **Riverine**

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

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

7. Is the wetland located in a very flat area with no obvious depression and no stream or river running through it and providing water. The wetland seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

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

8. Your wetland seems to be difficult to classify. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. Sometimes we find characteristics of several different hydrogeomorphic classes within one wetland boundary. Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland being rated. If the area of the second class is less than 10% classify the wetland using the first class.

HGM Classes Within a Delineated Wetland Boundary	*Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

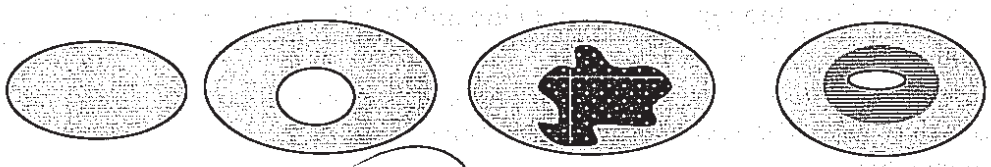
D	Depressional and Flats Wetlands	Points
	WATER QUALITY FUNCTIONS - Indicators that wetland functions to improve water quality	
D	**D 1. Does the wetland have the potential to improve water quality?** *(see p. 38)*	
D	D 1.1 Characteristics of surface water flows out of the wetland: Wetland is a depression with no surface water outlet — points = 3 Wetland has an intermittently flowing, or highly constricted, outlet — points = 2 (circled) Wetland has an unconstricted surface outlet — points = 1 Wetland is flat and has no obvious outlet and/or outlet is a ditch — points = 1	2
D	D 1.2 The soil 2 inches below the surface is clay, organic, or smells anoxic (hydrogen sulfide or rotten eggs). YES — points = 4 NO — points = 0 (circled)	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest class): Wetland has persistent, ungrazed, vegetation >= 95% of area — points = 5 Wetland has persistent, ungrazed, vegetation >= 1/2 of area — points = 3 (circled) Wetland has persistent, ungrazed vegetation >= 1/10 of area — points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area — points = 0	3
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland — points = 4 Area seasonally ponded is > ¼ total area of wetland — points = 2 (circled) Area seasonally ponded is < ¼ total area of wetland — points = 0 NOTE: *See text for indicators of seasonal and permanent inundation..*	2
D	**Total for D 1** *Add the points in the boxes above*	7
D	**D 2. Does the wetland have the opportunity to improve water quality?** *(see p. 44)* Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants.* — Grazing in the wetland or within 150 ft ✓ Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ YES (circled) multiplier is 2 NO multiplier is 1	multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 *Add score to table on p. 1*	14

D	Depressional and Flats Wetlands	Points
	HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation	
	D 3. Does the wetland have the <u>potential</u> to reduce flooding and erosion? *(see p. 46)*	
D	D 3.1 Characteristics of surface water flows out of the wetland Wetland has no surface water outlet — points = 4 Wetland has an intermittently flowing, or highly constricted, outlet — points = 2 Wetland is flat and has no obvious outlet and/or outlet is a small ditch — points = 1 Wetland has an unconstricted surface outlet — points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet* Marks of ponding are 3 ft or more above the surface — points = 7 The wetland is a "headwater" wetland" — points = 5 Marks of ponding between 2 ft to < 3 ft from surface — points = 5 Marks are at least 0.5 ft to < 2 ft from surface — points = 3 Wetland is flat but has small depressions on the surface that trap water — points = 1 Marks of ponding less than 0.5 ft — points = 0	3
D	D 3.3 Contribution of wetland to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland itself.* The area of the basin is less than 10 times the area of wetland — points = 5 The area of the basin is 10 to 100 times the area of the wetland — points = 3 Estimate → The area of the basin is more than 100 times the area of the wetland — points = 0 Wetland is in the FLATS class (basin = the wetland, by definition) — points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	5
D	**D 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** *(see p. 49)* Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems X Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ **YES** multiplier is 2 **NO** multiplier is 1	multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 *Add score to table on p. 1*	10

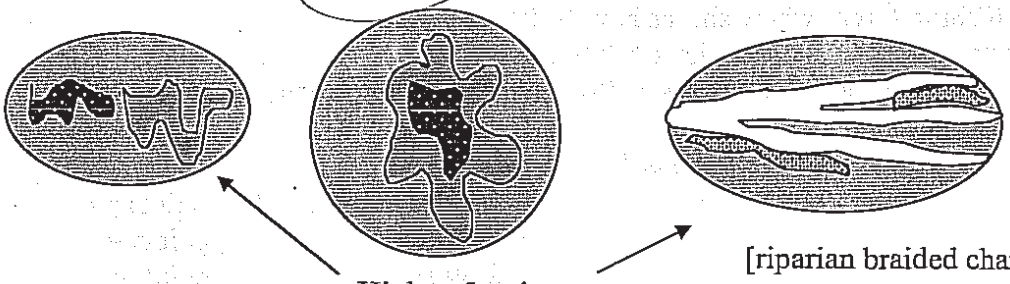
These questions apply to wetlands of all HGM classes.	Points
HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat	
H 1. Does the wetland have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin) if the class covers more than 10% of the area of the wetland or ¼ acre.* ___ Aquatic bed __X__ Emergent plants __X__ Scrub/shrub (areas where shrubs have >30% cover) __X__ Forested (areas where trees have >30% cover) ____ Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) *Add the number of vegetation types that qualify. If you have:* 4 types or more — points = 4 3 types — (points = 2) 2 types — points = 1 1 type — points = 0	2
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ___ Permanently flooded or inundated __X__ Seasonally flooded or inundated __X__ Occasionally flooded or inundated __X__ Saturated only ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ ***Lake-fringe wetland* = 2 points** ____ ***Freshwater tidal wetland* = 2 points** 4 or more types present — points = 3 3 types present — (points = 2) 2 types present — point = 1	2
H 1.3. Richness of Plant Species *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* *List species below if you want to:* If you counted: > 19 species — points = 2 5 - 19 species — (points = 1) < 5 species — points = 0	1

H 1.4. Interspersion of habitats *(see p. 76)*

Decided from the diagrams below whether interspersion between types of vegetation (described in H 1.1), or vegetation types and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



None = 0 points Low = 1 point Moderate = 2 points



High = 3 points [riparian braided channels]

NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".

1

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

- X Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).
- X Standing snags (diameter at the bottom > 4 inches) in the wetland
- ____ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream for at least 33 ft (10m)
- ____ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present
- ____ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*
- ____ Invasive plants cover less than 25% of the wetland area in each stratum of plants

2

H 1. TOTAL Score - potential for providing habitat
Add the scores in the column above

3

Comments

H 2. Does the wetland have the opportunity to provide habitat for many species?

H 2.1 Buffers *(see p. 80)*

Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. **(relatively undisturbed also means no-grazing)** **Points = 5**

— 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4**

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3**

If buffer does not meet any of the three criteria above

— No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— Heavy grazing in buffer. **Points = 1**

— Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0**

— Buffer does not meet any of the criteria above. **Points = 1**

1

H 2.2 Corridors and Connections *(see p. 81)*

H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*).

YES = 4 points (*go to H 2.3*) NO = go to H 2.2.2

H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above?

YES = **2 points** (*go to H 2.3*) NO = H 2.2.3

H 2.2.3 Is the wetland:

within 5 mi (8km) of a brackish or salt water estuary OR
within 3 mi of a large field or pasture (>40 acres) OR
within 1 mi of a lake greater than 20 acres?

YES = **1 point** NO = **0 points**

0

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)*

Which of the following priority habitats are within 330ft (100m) of the wetland?
(see text for a more detailed description of these priority habitats)

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

____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

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

____**Old-growth forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age.

____**Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

____**Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.

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

____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages

____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____**Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____**Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5% during the period of average annual low flow. Includes both estuaries and lagoons.

____**Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** No habitats = 0 points

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed (points = 3) The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores in the column above*	4
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	12

Identify WP ≈70' E of channel

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: 405 TRIP
Applicant/owner: WSDOT
Investigator(s): Douglas, Bunday

Date: 8/8/06
County: King
State: WA
S/T/R: 31/23N/5E

Do normal circumstances exist on the site? ☑ Yes ☐ No
Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No
Is the area a potential problem area? ☐ Yes ☑ No
Explanation of atypical or problem area:

Community ID:
Transect ID:
Plot ID: SP 1 (WET)
EV 25,8L

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
SALLAS	T	40	FACW+				
TYPLAT	H	95	OBL				
SOLDUL	H	5	FAC+				

HYDROPHYTIC VEGETATION INDICATORS: T = 40/40 = 100% S = ∅ H = 95/95 = 100%

% of dominants OBL, FACW, & FAC: 135/135 = 100%

Check all indicators that apply and explain below:

- ☑ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☑ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☑ Wetland plant database
- ☑ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale for decision/Remarks: 100% FAC Veg Dominant

HYDROLOGY

Is it the growing season? ☑ Yes ☐ No

Based on: ☐ Soil temp (record temp)
☐ Other (explain) August

Depth of inundation: ∅ inches

Depth to free water in pit: 10"

Depth to saturated soil: 2"

Water Marks: ☑ Yes ☐ No on

Sediment Deposits: ☐ Yes ☑ No

Drift Lines: ☐ Yes ☑ No

Drainage Patterns: ☑ Yes ☐ No

Oxidized Root (live roots) Channels <12in.: ☑ Yes ☐ No

Local Soil Survey: ☐ Yes ☑ No

FAC Neutral: ☑ Yes ☐ No

Water-stained Leaves: ☑ Yes ☐ No

Check all that apply & explain below:

- ☐ Stream, lake or gage data
- ☐ Aerial photographs
- ☐ Other

Other (explain):

Wetland hydrology present? ☑ Yes ☐ No

Rationale for decision/remarks:

Hydrology Depths in soil, below ≈12" duff (TYLA)

SOILS

Map Unit Name (Series and Phase): Puget silty clay loam — Drainage Class

Field observations confirm mapped type? ☐ Yes ☑ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-12"	Duff	(TYLAT)				
12-30"		10YR 4/1	7.5YR 5/6	-	loam	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma (=1) matrix
- ☑ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☑ Yes ☐ No

Rationale for decision/Remarks: Low Chroma & Mottles.

Wetland Determination

Hydrophytic vegetation present?	☑ Yes	☐ No
Hydric soils present?	☑ Yes	☐ No
Wetland hydrology present?	☑ Yes	☐ No
Is the sampling point within a wetland?	☑ Yes	☐ No

Rationale/Remarks: 3 of 3 parameters

NOTES:

Routine Wetland Determination

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: 405 TRIP
Applicant/owner: WSDOT
Investigator(s): Douglas, Burkley

Date: 8/8/06
County: King
State: WA
S/T/R: 31/23N/5E

Do normal circumstances exist on the site? ☑ Yes ☐ No
Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No
Is the area a potential problem area? ☐ Yes ☑ No
Explanation of atypical or problem area:

Community ID:
Transect ID:
Plot ID: SP 2 (WET) EV 25.8L

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
SALLAS	T	40	FACW*	FRLAPSH	H	30	OBL
SALHOO	T	30	FACW	PHAR	H	20	FACW
POPBA	T	30	FAC				
SPAO	S	10	FACW				

HYDROPHYTIC VEGETATION INDICATORS: T = 100/100 = 100% H = 50/50 = 100%

% of dominants OBL, FACW, & FAC: 150/100 = 100%

Check all indicators that apply and explain below:

☑ Visual observation of plant species growing in areas of prolonged inundation/saturation
☐ Morphological adaptations
☑ Technical Literature
☐ Physiological/reproductive adaptations
☑ Wetland plant database
☑ Personal knowledge of regional plant communities
☐ Other (explain)

Hydrophytic vegetation present? ☑ Yes ☐ No
Rationale for decision/Remarks: 100% Dom. Veg

HYDROLOGY

Is it the growing season? ☑ Yes ☐ No
Based on: ☐ Soil temp (record temp) ☑ Other (explain) Late Aug

Depth of inundation: 0 inches
Depth to free water in pit: 12"
Depth to saturated soil: 3"

Water Marks: ☑ Yes ☐ No on
Drift Lines: ☐ Yes ☑ No
Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☑ No
FAC Neutral: ☐ Yes ☐ No

Sediment Deposits: ☐ Yes ☐ No
Drainage Patterns: ☑ Yes ☐ No
Local Soil Survey: ☐ Yes ☐ No
Water-stained Leaves: ☑ Yes ☐ No

Check all that apply & explain below:
☐ Stream, lake or gage data
☐ Aerial photographs
☐ Other

Other (explain):

Wetland hydrology present? ☑ Yes ☐ No
Rationale for decision/remarks: Saturation & free water

SOILS

Map Unit Name (Series and Phase): Puget silty clay loam — Drainage Class

Taxonomy (subgroup) — Field observations confirm mapped type? ☐ Yes ☑ No

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-2	Duff	~~10YR 4/1~~				
2-12"+		10YR 4/1	10YR 4/6	—	—	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☑ Gleyed or Low-Chroma (=1) matrix
- ☑ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☑ Yes ☐ No

Rationale for decision/Remarks:

Wetland Determination

Hydrophytic vegetation present?	☑ Yes	☐ No
Hydric soils present?	☑ Yes	☐ No
Wetland hydrology present?	☑ Yes	☐ No
Is the sampling point within a wetland?	☑ Yes	☐ No

Rationale/Remarks: 3 of 3 parameters

NOTES:

Routine Wetland Determination

near flag #76

DATA FORM 1 *(Revised)*

WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: I-405 TRIP
Applicant/owner: WSDOT
Investigator(s): C. Douglas, J.

Date: 8/8/06
County: King
State: WA
S/T/R: 31/23N/5E

Do normal circumstances exist on the site? ☑ Yes ☐ No
Is the site significantly disturbed (atypical situation)? ☐ Yes ☑ No
Is the area a potential problem area? ☐ Yes ☑ No
Explanation of atypical or problem area:

Community ID: —
Transect ID: —
Plot ID: SP #3 (UP) RV 20.9E

VEGETATION (For *strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	*Stratum	% cover	Indicator	Dominant Plant Species	*Stratum	% cover	Indicator
RUBR	S	60	FACW				
POBA TRI	T	100	FAC				
SALLAS	T	20	FACW+				
PHAR	H	30	FACW				

HYDROPHYTIC VEGETATION INDICATORS: T = 120/120 = 100%, S = 0/60 = 0%, H = 30/30 = 0%

% of dominants OBL, FACW, & FAC: 150/210 = 71%

Check all indicators that apply and explain below:

- ☐ Visual observation of plant species growing in areas of prolonged inundation/saturation
- ☐ Morphological adaptations
- ☐ Technical Literature
- ☐ Physiological/reproductive adaptations
- ☑ Wetland plant database
- ☑ Personal knowledge of regional plant communities
- ☐ Other (explain)

Hydrophytic vegetation present? ☑ Yes ☐ No
Rationale for decision/Remarks: 71% WET Dom Veg

HYDROLOGY

Is it the growing season? ☑ Yes ☐ No
Based on: ☐ Soil temp (record temp) ☑ Other (explain) ANSWT

Depth of inundation: 0 inches
Depth to free water in pit: 0
Depth to saturated soil: 0

Water Marks: ☐ Yes ☑ No on
Drift Lines: ☐ Yes ☑ No
Oxidized Root (live roots) Channels <12 in.: ☐ Yes ☑ No
FAC Neutral: ☐ Yes ☑ No

Sediment Deposits: ☐ Yes ☑ No
Drainage Patterns: ☐ Yes ☑ No
Local Soil Survey: ☐ Yes ☑ No
Water-stained Leaves: ☐ Yes ☑ No

Check all that apply & explain below:

- ☐ Stream, lake or gage data
- ☐ Aerial photographs
- ☐ Other

Other (explain):

Wetland hydrology present? ☐ Yes ☑ No
Rationale for decision/remarks: Fill material

SOILS

Map Unit Name (Series and Phase): Puget Silty clay loam — Drainage Class

Field observations confirm mapped type? ☐ Yes ☑ No

Taxonomy (subgroup)

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size and contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-18"	Fill	10YR 4/4	—	—	With gravel Angular rock, Sandy loam	

Hydric Soil Indicators: (check all that apply)

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma (=1) matrix
- ☐ Matrix chroma ≤ 2 with mottles
- ☐ Mg or Fe Concretions
- ☐ High Organic Content in Surface Layer of Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on National/Local Hydric Soils List
- ☐ Other (explain in remarks)

Hydric soils present? ☐ Yes ☑ No

Rationale for decision/Remarks: Fill material

Wetland Determination

Hydrophytic vegetation present?	☑ Yes	☑ No
Hydric soils present?	☐ Yes	☑ No
Wetland hydrology present?	☐ Yes	☑ No
Is the sampling point within a wetland?	☐ Yes	☑ No

Rationale/Remarks: 1 of 3 parameters

NOTES:

Revised 4/97

Wetland name or number 25.9L

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 25.9L Date of site visit: 8/8/06

Rated by: Douglas, Pooley Trained by Ecology? Yes ____ No ✓ Date of training: —

SEC: 31 TWNSHP: 23N RNGE: 5E Is S/T/R in Appendix D? Yes ____ No ✓

Map of wetland unit: Figure ____ **Estimated size** 7 acre

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland: I ____ **II** ____ **III** ✓ **IV** ____

Category I =	Score > 70
Category II =	Score 51 - 69
Category III =	Score 30 – 50
Category IV =	Score < 30

Score for Water Quality Functions	18
Score for Hydrologic Functions	10
Score for Habitat Functions	11
TOTAL Score for Functions	39

Category based on SPECIAL CHARACTERISTCS of Wetland I ____ **II** ____ **Does not apply** ✓

Final Category (choose the "highest" category from above") III

Summary of basic information about the wetland unit.

Wetland Unit has Special Characteristics	
Estuarine	
Natural Heritage Wetland	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	

Wetland HGM Class used for Rating	
Depressional	✓
Riverine	
Lake-fringe	
Slope	
Flats	
Freshwater Tidal	
Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below? If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands that Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category 1 Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		✓

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands in to those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number 25.3L

Classification of Vegetated Wetlands for Western Washington

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

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
   NO – go to 2 **YES** – the wetland class is **Tidal Fringe**
   If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?
   YES – Freshwater Tidal Fringe **NO – Saltwater Tidal Fringe (Estuarine)**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is a Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were call estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. _____).

2. The entire wetland unit is flat and precipitation is only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
   NO – go to 3 **YES** – The wetland class is **Flats**
   If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland meet both of the following criteria?
   _____ The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) where at least 20 acres (8ha) in size;
   _____ At least 30% of the open water area is deeper than 6.6 (2 m)?
   NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland meet all of the following criteria?
   _____ The wetland is on a slope *(slope can be very gradual)*.
   _____ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
   _____ The water leaves the wetland **without being impounded**?
   NOTE: *Surface water does not pond in these types of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).*
   NO – go to 5 **YES** – The wetland class is **Slope**

5. Does the entire wetland meet all of the following criteria?
   _____ The unit is in a valley or stream channel where it gets inundated by overbank flooding from that stream or river.
   _____ The overbank flooding occurs at least once every two years.
   NOTE: *The riverine unit can contain depressions that are filled with water when the river is not flooding..*
   NO – go to 6 **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present is higher than the interior of the wetland.
   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.
   No – go to 8 YES – The wetland class is Depressional

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit, classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

Wetland name or number 2.58L

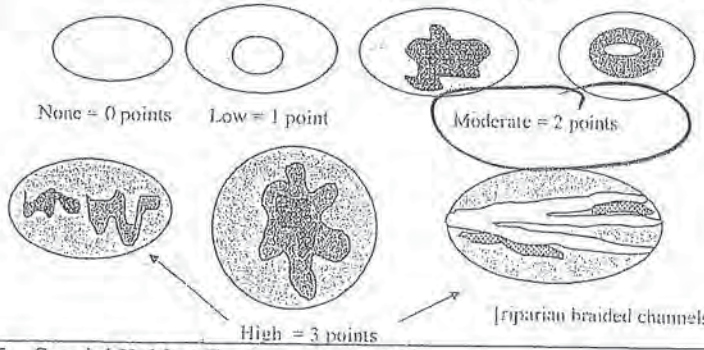
D	Depressional and Flat Wetlands	Points (only 1 score per box)
	WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality.	
D 1	**Does the wetland have the potential to improve water quality?**	*(see p.38)*
	D 1.1 Characteristics of surface water flows out of the wetland: • Unit is a depression with no surface water leaving it (no outlet) ..... points = 3 • Unit has an intermittently flowing, OR highly constricted, permanently flowing outlet ..... points = 2 • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* ..... points = 1 • Unit is a "flat" depression (Q.7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch ..... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* **Provide photo or drawing**	Figure ___ 2
	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) **YES** points = 4 **NO** points = 0	0
	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): • Wetland has persistent, ungrazed vegetation > = 95% of area ..... points = 5 • Wetland has persistent, ungrazed vegetation > = 1/2 of area ..... points = 3 • Wetland has persistent, ungrazed vegetation > = 1/10 of area ..... points = 1 • Wetland has persistent, ungrazed vegetation < 1/10 of area ..... points = 0 **Map of Cowardin vegetation classes**	Figure ___ 3
	D 1.4 Characteristics of seasonal ponding or inundation: *This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.* • Area seasonally ponded is > 1/2 total area of wetland ..... points = 4 • Area seasonally ponded is > 1/4 total area of wetland ..... points = 2 • Area seasonally ponded is < 1/4 total area of wetland ..... points = 0 **Map of Hydroperiods**	Figure ___ 4
	Total for D 1 *Add the points in the boxes above*	9
D 2	**Does the wetland have the opportunity to improve water quality?** *(see p. 44)* Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland? *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ___ Grazing in the wetland or within 150 ft _✓_ Untreated stormwater discharges to wetland ___ Tilled fields or orchards within 150 ft. of wetland _✓_ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging _✓_ Residential, urban areas, golf courses are within 150 ft. of wetland ___ Wetland is fed by groundwater high in phosphorus or nitrogen ___ Other ___ **YES** multiplier is 2 **NO** multiplier is 1	Multiplier 2
◆	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2; then ***add score to table on p. 1***	18
	HYDROLOGIC FUNCTIONS – Indicators that wetland unit functions to reduce flooding and stream degradation.	
D 3	**Does the wetland have the potential to reduce flooding and erosion?** *(see p.46)*	
	D 3.1 Characteristics of surface water flows out of the wetland unit • Unit is a depression with no surface water leaving it (no outlet) ..... points = 4 • Unit has an intermittently flowing, OR highly constricted permanently flowing outlet ..... points = 2 • Unit is a "flat" depression (Q.7 on key) or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch ..... points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* • Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* ..... points = 0	2
	D 3.2 Depth of storage during wet periods. *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* • Marks of ponding are 3 ft. or more above the surface or bottom of the outlet ..... points = 7 • The wetland is a "headwater" wetland ..... points = 5 • Marks of ponding between 2 ft. to < 3 ft. from surface or bottom of outlet ..... points = 5 • Marks are at least 0.5 ft. to < 2 ft. from surface or bottom of outlet ..... points = 3 • Wetland is flat (yes to Q.2 or Q.7 on key)but has small depressions on the surface that trap water points = 1 • Marks of ponding less than 0.5 ft ..... points = 0	3
	D 3.3 Contribution of wetland unit to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* • The area of the basin is less than 10 times the area of unit ..... points = 5 • The area of the basin is 10 to 100 times the area of the unit ..... points = 3 • The area of the basin is more than 100 times the area of the unit ..... points = 0 • Entire unit is in the FLATS class ..... points = 5	0
	Total for D 3 *Add the points in the boxes above*	5
D 4	**Does the wetland have the opportunity to reduce flooding and erosion?** *(see p. 49)* Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from	Multiplier 2

Wetland name or number 2.592

	groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ____ Wetland is in a headwater of a river or stream that has flooding problems. ____ Wetland drains to a river or stream that has flooding problems ____ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ____ Other _____ **YES** multiplier is 2 **NO** multiplier is 1	2
◆	**TOTAL – Hydrologic Functions** Multiply the score from D3 by D4; then *add score to table on p. 1*	10

Comments:

Wetland name or number 25.82

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS – Indicators that wetland functions to provide important habitat.		Points (only 1 score per box)
H 1	**Does the wetland have the potential to provide habitat for many species?**	
	H 1.1 Vegetation structure *(see P. 72)*: *Check the types of vegetation classes present (as defined by Cowardin) – Size threshold for each class is 1/4 acre or more than 10% of the area if unit is smaller than 2.5 acres.* ✓ Aquatic Bed ✓ Emergent plants ___ Scrub/shrub (areas where shrubs have > 30% cover) ___ Forested (areas where trees have > 30% cover) *If the unit has a forested class check if:* ___ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon. *Add the number of vegetation types that qualify. If you have:* 4 structures or more.....points = 4 2 structures.....points = 1 **Map of Cowardin vegetation classes** 3 structures..... points = 2 1 structure..... points = 0	Figure ___ 1
	H 1.2 Hydroperiods *(see p.73)*: *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or 1/4 acre to count (see text for descriptions of hydroperiods).* ✓ Permanently flooded or inundated ___ Seasonally flooded or inundated ✓ Occasionally flooded or inundated ___ Saturated only ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ **Lake-fringe wetland.....= 2 points** ___ **Freshwater tidal wetland.....= 2 points** 4 or more types present points = 3 3 or more types present..... points = 2 2 types present.....points = 1 1 type present..... points = 0 **Map of hydroperiods**	Figure ___ 1
	H 1.3 Richness of Plant Species *(see p. 75)*: Count the number of plant species in the wetland that cover at least 10 ft^2 *(different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle.* If you counted: > 19 species.....points = 2 5 – 19 species ..... points = 1 < 5 species.....points = 0 List species below if you want to:	1
	H 1.4 Interspersion of Habitats *(see p. 76)*: Decided from the diagrams below whether interspersion between Cowardin vegetation (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  Note: If you have 4 or more classes or 3 vegetation classes and open water, the rating is always "high". **Use map of Cowardin classes.**	Figure ___ 2
	H 1.5 Special Habitat Features *(see p. 77)*: *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ✓ Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft. long) ___ Standing snags (diameter at the bottom > 4 inches) in the wetland ___ Undercut banks are present for at least 6.6 ft. (2m) and/or overhanging vegetation extends at least 3.3 ft. (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft. (10m) ___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ✓ At least 1/4 acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ___ Invasive plants cover less than 25% of the wetland area in each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	2
	H 1 TOTAL Score – potential for providing habitat *Add the points in the column above*	7

Wetland name or number 25.3L

H 2	Does the wetland have the opportunity to provide habitat for many species?	(only 1 score per box)
	H 2.1 Buffers *(see P. 80)*: *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed".* ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% of circumference. No structures are within the undisturbed part of buffer (relatively undisturbed also means no grazing, no landscaping, no daily human use).. ..... **points = 5** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference..... **points = 4** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference..... **points = 4** ____ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference..... **points = 3** ____ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference ..... **points = 3** **If buffer does not meet any of the criteria above:** ____ No paved areas (except paved trails) or buildings within 25m (80 ft) of wetland > 95% circumference. Light to moderate grazing or lawns are OK..... **points = 2** ____ No paved areas of buildings within 50m of wetland for > 50% circumference. Light to moderate grazing or lawns are OK..... **points = 2** ____ Heavy grazing in buffer..... **points = 1** ____ Vegetated buffers are < 2m wide (6.6 ft) for more than 95% circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland)..... **points = 0** ____ Buffer does not meet any of the criteria above ..... **points = 1** **Arial photo showing buffers**	**Figure ___** 1
	H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft. wide, has at least a 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(Dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* **YES = 4 points** (go to H 2.3) **NO** = go to H 2.2.2 H. 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50 ft. wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR a Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? **YES = 2 points** (go to H 2.3) **NO** = go to H 2.2.3 H. 2.2.3 Is the wetland: • Within 5 mi (8km) of a brackish or salt water estuary OR • Within 3 miles of a large field or pasture (> 40 acres) OR • Within 1 mile of a lake greater than 20 acres? **YES** = 1 point **NO** = 0 points	0

Comments:

Wetland name or number 25.82

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 82):
Which of the following priority habitats are within 330 ft. (100m) of the wetland? *NOTE: the connections do not have to be relatively undisturbed. These are DFW definitions. Check with your local DFW biologist if there are any questions.*

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

____ **Aspen Stands**: Pure or mixed stands of aspen greater than 0.8 ha (2 acres)

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

____ **Old-growth forests**: (Old growth west of Cascade Crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings, with at least 20 trees/ha (8 trees/acre) > 81cm (32 in) dbh or > 200 years of age.

____ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade Crest.

____ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases and/or forbs form the natural climax plant community.

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

____ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages.

____ **Oregon white Oak**: Woodlands stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

____ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

____ **Estuary/Estuary-like**: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons.

____ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control).

If wetland has 3 or more priority habitats .= 4 points If wetland has 1 priority habit ...= 1 point
If wetland has 2 priority habitats .....= 3 points No habitats.....= 0 points
Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. (Nearby wetlands are addressed in question H 2.4).

0

H 2.4 Wetland Landscape: *Choose the **one** description of the landscape around the wetland that best fits (see p. 84)*

- There are at least 3 other wetlands within 1/2 mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development.....points = 5
- The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within 1/2 mile.....points = 5
- There are at least 3 other wetlands within 1/2 mile, BUT the connections between them are disturbed.....points = 3
- The wetland fringe on a lake **with** disturbance and there are 3 other lake-fringe wetlands within 1/2 mile.....points = 3
- There is at least 1 wetland within 1/2 mile.....points = 2
- There are no wetlands within 1/2 mile.....points = 0

3

	H 2 TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	7
	TOTAL for H 1 from page 8	4
◆	**Total Score for Habitat Functions** Add the points for H 1 and H 2; then *record the result on p. 1*	11

Comments:

Wetland name or number 25.8L

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

	Wetland Type – *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	
SC1	**Estuarine wetlands?** *(see p.86)* Does the wetland unit meet the following criteria for Estuarine wetlands? ___ The dominant water regime is tidal, ___ Vegetated, and ___ With a salinity greater than 0.5 ppt. **YES** = Go to SC 1.1 **NO** ___	
	SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? **YES** = Category I **NO** = go to SC 1.2	**Cat. 1**
	SC 1.2 Is the wetland at least 1 acre in size and meets at least two of the following conditions? **YES** = Category I **NO** = Category II ___ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp,. are only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category 1. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ___ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland ___ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual Rating I/II**
SC2	**Natural Heritage Wetlands** *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland being rated in a Section/Township/Range that contains a natural heritage wetland? *(This question is used to screen out most sites before you need to contact WNHP/DNR.)* S/T/R information from Appendix D _____ or accessed from WNHP/DNR web site _____ **YES** ___ Contact WNHP/DNR (see p. 79) and go to SC 2.2 **NO** _____ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? **YES** = Category 1 **NO** _____ not a Heritage Wetland	**Cat I**
SC3	**Bogs** *(see p. 87)* Does the wetland **(or any part of the unit)** meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. ***If you answer yes you will still need to rate the wetland based on its function.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of soil profile? (See Appendix B for a field key to identify organic soils)? **YES** = go to question 3 **NO** = go to question 2 2. Does the wetland have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? **YES** = go to question 3 **NO** = is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? **YES** = Is a bog for purpose of rating **NO** = go to question 4 NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. 4. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine. WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)*? **YES** = Category I **NO** = Is not a bog for purpose of rating	**Cat. I**

Wetland name or number 25.5C

SC4	**Forested Wetlands** *(see p. 90)* Does the wetland have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its function.* ____ **Old-growth forests**: (west of Cascade Crest) Stands of at least two three species forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm or more). NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. ____ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. **YES** = Category I **NO** = ____ not a forested wetland with special characteristics	**Cat. I**
SC5	**Wetlands in Coastal Lagoons** *(see p. 91)* Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ____ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks. ____ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom.)* **YES** = Go to SC 5.1 **NO** ____ not a wetland in a coastal lagoon SC 5.1 Does the wetland meet all of the following three conditions? ____ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing) and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). ____ At least 3/4 of the landward edge of the wetland has a 100 ft. buffer of shrub, forest, or un-grazed or un-mowed grassland. ____ The wetland is larger than 1/10 acre (4350 square ft.) **YES** = Category I **NO** = Category II	**Cat. I** **Cat. II**
SC6	**Interdunal Wetlands** *(see p. 93)* Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? **YES** = Go to SC 6.1 **NO** ____ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula -- lands west of SR 103 • Grayland-Westport -- lands west of SR 105 • Ocean Shores-Copalis – lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is one acre or larger? **YES** = Category II **NO** = go to SC 6.2 SC 6.2 Is the wetland between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? **YES** = Category III	**Cat. II** **Cat. III**
◆	**Category of wetland based on Special Characteristics** *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered **NO** for all types enter "Not Applicable" on p. 1	NA

Comments:

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APPENDIX D WETLAND SUMMARIES

Green River Basin

Wetland 0.1R is a linear shaped, 0.05-acre emergent wetland dominated by reed canarygrass (*Phalaris arundinacea*), bentgrass (*Agrostis stolonifera*), and soft rush (*Juncus effusus*). Wetland 0.15R is a 0.52-acre emergent wetland dominated by reed canarygrass with a surface hydrological connection to Gilliam Creek. Wetland 0.25M is a linear shaped, 0.07-acre emergent wetland dominated by reed canarygrass. Wetland 0.3R is a forested, 1.29 acre wetland with a surface hydrological connection to Gilliam Creek. This wetland contains a large, forested, topographic depression that is ponded year-round and is dominated by willow (*Salix ssp.*) and Western red cedar (*Thuja plicata*). Wetland 0.4L is a linear shaped, 0.03-acre, emergent wetland associated with Cottage Creek and dominated by reed canarygrass, bentgrass, and common cattail (*Typha latifolia*). Wetland 0.6L is a linear shaped, 0.17-acre scrub-shrub wetland dominated by reed canarygrass, black cottonwood (*Populus balsamifera ssp. trichocarpa*), willow, and soft rush, but also contains common cattail. Water from this wetland flows into a pipe that runs beneath Interstate 405 (I-405) and connects with Gilliam Creek. Wetland 0.9R is a 1.00-acre scrub-shrub wetland with aquatic bed habitat, dominated by willow along the perimeter. Wetland 0.9R is the former main channel of the Green River.

What is linear shaped?
Linear shaped is long and narrow with parallel sides.

Springbrook Creek Basin

Three of the wetlands in the Springbrook Creek Basin (2.2R-A, 2.2R-B, and 2.31R) are located in the cloverleaf interchange of I-405 and State Route 167 (SR 167) and convey stormwater runoff. Wetlands 2.2R-A and 2.2RB are each linear shaped, 0.03-acre scrub-shrub systems dominated by Himalayan blackberry (*Rubus armeniacus*) and reed canarygrass. These wetlands were originally delineated as a single wetland and later separated based on the outcome of a field visit with the U.S. Army Corps of Engineers. Wetland 2.31R is a 0.01-acre emergent system dominated by reed canarygrass.

At the eastern end of the study area, two tributaries to Springbrook Creek (Thunder Hills Creek and Rolling Hills Creek) and an unnamed tributary to Rolling Hills Creek enter the study area and bring flow to several roadside ditches and

topographical depressions. Wetland 2.6R is a 0.15-acre scrub-shrub and emergent wetland system dominated by reed canarygrass, common cattail, skunk cabbage (*Lysichitum americanum*), red-osier dogwood (*Cornus stolonifera*), and Himalayan blackberry. This wetland is associated with an unnamed tributary to Rolling Hills Creek that enters and exits the wetland through culverts located beneath adjacent roads. Wetland 2.7R is a 0.25-acre scrub-shrub and emergent wetland system dominated by small-fruited bulrush (*Scirpus microcarpus*), reed canarygrass, common cattail, Pacific willow, and Himalayan blackberry. This wetland also is associated with an unnamed tributary to Rolling Hills Creek that enters and exits the wetland through culverts located beneath adjacent roads.

Wetland 2.81L is a 0.03-acre emergent depressional wetland dominated by reed canarygrass and Himalayan blackberry. Wetland 2.81R is a 0.07-acre, scrub-shrub wetland dominated by salmonberry (*Rubus spectabilis*), with lady fern (*Athyrium filix-femina*) and skunk cabbage also occurring. Rolling Hills Creek flows through Wetland 2.81R.

Wetland 2.82R is a 0.38-acre scrub-shrub wetland dominated by lady fern, reed canarygrass, red alder (*Alnus rubra Bong.*), willow, and Himalayan blackberry.

Wetland 2.9L is a 1.05-acre scrub-shrub wetland that is dominated by common cattail, reed canarygrass, Pacific willow, and Himalayan blackberry and receives water from Thunder Hills Creek via culverts.

Wetland 3.0R is a 0.04-acre scrub-shrub and emergent wetland that is dominated by red alder and reed canarygrass with Himalayan blackberry occurring along the wetland boundary.

Wetland 24.7R is the Panther Creek wetland system located east of SR 167 and extending southerly to the end of the study area boundary associated with SR 167. Wetland 24.7R is approximately 61 acres in size. Dominant vegetation in this wetland includes reed canarygrass, red-osier dogwood, Himalayan blackberry, willow, red alder, and black cottonwood. Wetland 24.7R typically extends more than 200 feet east of the Washington State Department of Transportation (WSDOT) right-of-way. The main channel of Panther Creek flows parallel to SR 167 through Wetland 24.7R.

Wetland 25.0L is a linear shaped, 4.51-acre forested wetland that extends along the west side of SR 167. The wetland is dominated by reed canarygrass, Himalayan blackberry, Pacific willow, and black cottonwood. It receives flow from the Panther Creek wetland complex through multiple culverts under the highway.

Wetland 25.5L is an 11.38-acre forested wetland associated with Panther Creek and dominated by reed canarygrass, red-osier dogwood, spirea (*Spiraea douglasii*), and Pacific willow. Wetland 25.5L is located west of East Valley Road and extends several hundred feet east of the East Valley Road right-of-way. The wetland was only delineated to the right-of-way boundary due to limitations associated with right-of-entry and because the project design does not extend outside the right-of-way in this portion of the study area. Wetland 25.5L receives flow from the Panther Creek wetland complex through multiple culverts under SR 167 and East Valley Road.

Wetland 25.7L is a small 0.3-acre scrub-shrub wetland dominated by reed canarygrass, Himalayan blackberry, and willow that extends along the west side of SR 167.

Wetland 25.8L is an 11.50-acre scrub-shrub and emergent wetland dominated by reed canarygrass, common cattail, and willow. Wetland 25.8L is located to the west of East Valley Road. Several culverts convey flow into (stormwater runoff) and out of the wetland.

Cedar River Basin

No wetlands occur in the portion of the Cedar River Basin that lies within the study area.

APPENDIX E WETLAND FUNCTIONS TABLE

Exhibit E-1: Summary of Wetland Functions in the Study Area

Wetland	Wetland Classification	Total Water Quality Functions	Total Hydrologic Functions	Total Habitat Functions	Total Functions
Total Maximum Score		**32**	**32**	**36**	**100**
0.1R	Depressional	10	4	8	22
0.15R	Depressional	16	8	16	40
0.25M	Depressional	4	2	5	11
0.3R	Depressional	16	12	17	45
0.4L	Depressional	4	2	9	15
0.6L	Depressional	16	2	9	27
0.9R	Depressional	12	24	9	45
2.2R-A	Depressional	4	6	7	17
2.2R-B	Depressional	10	6	8	24
2.31R	Depressional	10	0	5	15
2.6R	Riverine	16	20	12	48
2.7R	Depressional	18	14	12	44
2.81L	Depressional	10	4	8	22
2.81R	Riverine	16	26	15	57
2.82R	Slope	2	6	13	21
2.9L	Depressional	10	16	14	40
3.0R	Riverine	10	20	11	41
24.7R	Depressional	26	16	19	61
25.0L	Depressional	22	10	15	47
25.5L	Depressional & Riverine	18	10	16	44
25.7L	Depressional	14	10	12	36
25.8L	Depressional	18	10	11	39

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APPENDIX F TREE SURVEY

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INTRODUCTION

Prior to the commencement of construction activities associated with the Interstate 405 (I-405), Tukwila to Renton Improvement Project, the Washington State Department of Transportation (WSDOT) conducted tree surveys to quantitatively and qualitatively document existing tree abundance and composition in areas of proposed clearing or grading. The collected information will be used to support the analysis of project effects on large woody debris (LWD) recruitment to streams in and downstream of the study area. The methodology used to document existing tree presence in the study area was developed, in part, to be consistent with the September 1998 Northwest Indian Fisheries document entitled *TFW Effectiveness Monitoring and Evaluation Program-Riparian Stand Survey, Final Draft* and in a manner that can be repeated for other tree surveys that may be conducted in the future. The information provided in this report is based on fieldwork conducted by consultants on behalf of WSDOT on August 15, 16, and 17, 2007. Topics discussed in this report include the following:

- Tree survey protocol – extent of surveys
- Data collection methods
- Description of surveyed areas
- Results of tree surveys

TREE SURVEY PROTOCOL

Tree surveys were conducted in areas proposed for clearing and/or grading and occurring within 200 feet of streams (Tree Survey Area). The surveys were conducted within a defined area bounded by the following extents:

- Streams within the project footprint were depicted on small-scale field maps. 0 to 100 and 100 to 200 foot survey buffer lines were offset from approximately the ordinary high water mark (OHWM). The proposed clearing/grading limits were then overlayed onto the maps. The areas of intersection were identified with a unique pattern representing the survey areas.
- Survey areas did not extend across or into roadways or parking lots.
- Tree surveys were conducted only in areas where 0 to 100 foot and 100 to 200 foot buffers and clearing/grading limits overlapped.
- If the offset lines from separate stream reaches overlapped, independent surveys were conducted for each stream.

DATA COLLECTION METHODS

The following methods were adhered to at all tree survey locations:

- The Tree Survey Area and stream locations were confirmed using I-405 or State Route (SR) 167 mile post information, field mapping, and visual inspections of the stream.
- The "Field Conditions" portion of the data sheet was completed, including field staff names, dates, conditions, and comments (see Attachment A – Data Forms).
- The approximate extent of clearing impacts within the 100 to 200 foot buffer was defined and flagged using a range finder, tape measure, measuring wheel, GPS, and/or field mapping as appropriate for field conditions.
- Vegetation or snags with a diameter at breast height (dbh) greater than 6 inches within the Tree Survey Area were identified and recorded as follows:
    - A qualified biologist measured an individual tree's dbh, identified the species, and recorded information about the tree on the data sheet.
    - The total number of trees/snags in the Tree Survey Area were classified by the following size ranges: 6 to 12 inches dbh, 12 to 18 inches dbh, 18 to 24 inches dbh, 24 to 30 inches dbh, 30 to 36 inches dbh, and greater than 36 inches dbh (actual dbh of trees greater than 36 inches was recorded).
    - If a tree had more than one stem below dbh, each of the individual stems greater than 6 inches dbh were counted as a separate tree
    - Downed woody debris with a dbh of greater than 6 inches was recorded within the 0 to 100 foot offset line, but not the 100 to 200 foot offset line. Downed woody debris was tallied as individual pieces and was not identified by species.
    - Photographs were taken from the 100 to 200 foot offset line facing the Tree Survey Area to document the trees and Tree Survey Area.
    - The diameters of recently cut tree stumps (over 6 inches in diameter) were measured and noted in the comment section.

When special circumstances arose in the field, additional field comments and photos were taken to document those circumstances.

Figure 1 provides an example of a field map depicting the extent of a single representative study area.



405 Corridor Program
Congestion Relief & Bus Rapid Transit Projects
Representative Field Map
TREE SURVEY REPORT
Clearing and Grading
100- foot Survey Area
200-foot Survey Area
100-foot Buffer
200-foot Buffer
Stream
Culvert
N
W
E
S
0
50
100
Feet
1 inch equals 100 feet

DESCRIPTION OF SURVEYED AREAS

Seven waterbodies in the study area were identified for tree surveys using the tree survey protocol described in this report: the Cedar River, the Green River, Gilliam Creek, Rolling Hills Creek, the unnamed tributary to Rolling Hills Creek, Thunder Hills Creek, and the unnamed tributary to Thunder Hills Creek. Springbrook Creek and the unnamed tributary to Thunder Hills Creek were surveyed, but did not meet the parameters for LWD recruitment (e.g., no trees larger than 6 inches dbh). Tree counts were combined on the same field data form at Rolling Hills Creek and the unnamed tributary to Rolling Hills Creek due to their proximity to one another and to prevent trees from being counted twice.

RESULTS

Tree surveys conducted at the streams and rivers in the study area identified 935 trees within the 0 to 100 foot offset line and 128 trees within the 100 to 200 foot offset line, for a combined total of 1,063 trees, as shown in Table 1. Of the 935 trees within the 0 to 100 foot offset, 32 were evergreen (3 percent) and the remainder were deciduous. Of the 128 trees within the 100 to 200 foot offset, 15 were evergreen (12 percent).