development of an erosion and sediment control plan and periodic inspection to ensure that the plan is implemented and effective. Typical erosion control elements include silt fences at the bases of disturbed slopes, straw bale check dams in ditch lines, graveled entrances to construction sites, filter strips between disturbed ground and wetlands, and temporary ground cover when work pauses for extended periods. If inspection shows that the installed erosion and sediment controls are failing or inadequate, they will be immediately repaired or upgraded. The failure of erosion and sediment controls that leads to the exceedance of turbidity standards in receiving waters will result in work being stopped until the problem is fixed.

There will be no in-water work; the proposed project does not cross any streams. Wetlands and other sensitive resources would be marked as no-work zones with fencing.

A pollution control plan to prevent and deal with chemical spills will also be prepared. The plan details limitations on the location of fuel and chemical storage, and on where refueling of construction equipment can take place. Fuel and chemical storage areas are usually required to be at least 300 feet away from open water or wetlands. The storage containers (fuel tanks, etc.) should be on impermeable pads to prevent groundwater contamination in the case of spills. The construction site must also have adequate material to contain and clean up spills, and staff that are familiar with the spill response plan.

Mitigation for water quality due to the results of highway operation: Stormwater in each of the drainage sub-basins of the project will be treated by detention basins and infiltration into the soil. In Sub-basin 1, one swale would be constructed just upstream of the wetlands. In Sub-basin 2, the two existing basins would be abandoned and two new swales would take their place. In Sub-basin 3, a dry detention basin, a small pond with a swale at the bottom, would be constructed.

Reports on dry detention basins' pollutant removal effectiveness range from a low of 25% to a high of above 70%. Well designed facilities should manage between 60% and 70% removal of the total load of pollutants, but are less capable of removing dissolved metals. Infiltration through soil is very effective at removal of sediment, oil and grease, and metals, including dissolved metals. Non-engineered vegetated roadside ditches can have pollutant removal capabilities equivalent to engineered water quality swales. If they are constructed in permeable soils and the gradient is reasonable flat, they can enhance infiltration.

Dry detention basins are areas that may have a permanent pool in the bottom (probably near ground water elevations) and have additional capacity so they can fill up during a storm and then drain back to the permanent pool level after the storm. Wet detention basins are ponds where stormwater displaces existing water but the water level stays the same, except in drought conditions. This accomplishes treatment but not detention.

In the western segment (Sub-basin 1), roadside drainage would be upgraded to flat bottomed, vegetated ditches. The ditches should provide overall treatment efficiency comparable to engineered water quality swales, because the natural gradient is within the deign criteria for engineered swales, and the length of the ditches is considerably longer than standard swales. With an average pollutant removal efficiency of 20%, the annual pollutant loading from the western drainage segment would decrease slightly below existing conditions, while 50% removal would substantially reduce the pollutant load. The moderately rapid infiltration in the upper levels of the soils should allow for infiltration of frequent, low volume precipitation. This is especially important for minimizing the discharge of dissolved copper.

The highway in the middle segment (Sub-basin 2) would continue to discharge stormwater into either

the small existing basins, or flow into the adjacent wooded area north of the highway. Since there is no connection to any surface water in this segment except during extreme events, there would be no water quality impact to surface waters. Infiltration through the soil would provide very effective treatment before the stormwater reaches the groundwater table.

In the eastern segment (Sub-basin 3), all the stormwater would be treated before discharge to the unnamed drainage. The highway runoff would be piped to a detention basin just west of E. Wildwood Avenue on the north side of Highway 26. As a result, runoff from 3.44 acres of pavement would be treated, compared to 2.8 acres of pavement receiving no treatment prior to the project. The detention basin would allow for infiltration of the runoff from high frequency, low volume storms. A treatment efficiency of 60% pollutant removal is more than sufficient to prevent exceedances of water quality standards in the unnamed drainage, and improvement over existing conditions. Treatment would also substantially reduce the total pollutant load discharged to the unnamed drainage.

Mitigation for Hydrologic Impacts: No specific hydrologic mitigation is proposed for the project, but water quality features would ameliorate the impacts. In Sub-basin 1, the western segment, the construction of vegetated, flat bottomed ditches would increase the opportunity for infiltration beyond what the existing drainage system allows. The soils have moderately high permeability in the upper layers, so small, high frequency storm runoff should largely soak into the ground.

Because the central section (Sub-basin 2) would not discharge to surface water, except during extreme events that already flow to the unnamed drainage, no stormwater detention or other flow modification is necessary.

The east segment (Sub-basin 3) detention basin would be sized both to provide water quality treatment of the water quality design storm and to ensure that the drainage design event does not overwhelm the pipe to the unnamed drainage. As a result, peak flows up to the 10-year, 24-hour storm should be lower or similar to existing conditions. Larger storms that are not currently carried by the storm drain would not be conveyed by the proposed system. Lost infiltration capacity would be somewhat compensated for by using a permeable bed for the detention basin. Stormwater from small events that is now sent to the drainage would be infiltrated into the soil, while larger events may have less infiltration than at present, though still some.

3.3 Wetlands and Jurisdictional Waters

What are wetlands?

Wetlands filter water, trap sediments, provide flood protection, naturally replenish surface waters, provide habitat for unique plants and animals, and offer many recreational opportunities. The US Army Corps of Engineers (USACE) and the US Environmental Protection Agency (EPA) define wetlands as follows:

"Those areas that are inundated or saturated by surface or groundwater at a frequency or duration 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." (33 Code of Federal Regulations 328.3)

The USACE 1987 Wetlands Delineation Manual establishes procedures for identifying wetlands. The primary laws that regulate the protection of wetlands as valuable natural resources are the Rivers and Harbors Act of 1988 and the Clean Water Act Section 404.

Wetlands historically have been regarded as wastelands suitable only for draining or filling. However, wetlands are essential features of the landscape, performing vital functions in the hydrological cycle, such as deposition of suspended sediment, modification of storm flood pulses, absorption of certain waterborne chemicals such as nitrogens and phosphates, plus many other functions. Wetlands have three broad types of functions: ecological (hydrologic, water quality, fish and wildlife); economic (farming, timber harvest, and revenue from recreation); and, recreation/aesthetic (hunting, boating, swimming, fishing, bird/wildlife watching and photography). Typically wetlands perform several functions at once.

Are there wetlands in the project area?

Yes, a 0.84 acre complex of palustrine scrub/shrub wetlands exists at the west end of the project area both north and south of US 26. This complex of wetlands is located at approximately MP 38.75 to about MP 39.0 on the south side of the highway and approximately MP 38.85 to MP 38.95 on the north side of the highway. See Figure 2-3(a). Figure 3-3 Shows the wetland on the north side of US26.

These wetlands meet all three wetland field parameters (soil type, vegetation, and hydrology) as described by the USACE 1987 manual.

USACE would most likely regulate the identified wetlands since the wetlands connect to navigable waters via a small drainage that flows west under the entry drive for Mt. Hood Village to eventually drain into the Salmon River west of the project area. Wetlands on the north side of US 26 are connected to the wetlands on the south side of the highway via a culvert beneath US 26.

The Hydrogeomorphic (HGM) based assessment of the functional capacity of the wetlands showed the highest function capacity scores for water quality functions, amphibian and turtle habitat and primary production (the conversion of solar energy into organic matter by photosynthesis). Overall, the wetlands are moderate in values. Although they are high in value due to diversity of vegetation and hydrology, the small size and proximity to both the highway and residential development limit their overall value.

The HGM approach is a multi-agency effort involving the U.S. Army Corps of Engineers, the Environmental Protection Agency, the Federal Highway Administration, the Natural Resources Conservation Service, and the U.S. Fish and Wildlife Service. It is intended to lay a foundation for and support ongoing efforts to develop methods for assessing the physical, chemical, and biological functions of wetlands.

What are the jurisdictional waters in the project area?

Waters of the state and waters of the US include the roadside drainage ditches in several sections of the project, as well as ditches that have almost perennial flow that is not generated from highway run-off. Some of the drainage ditches within the project area are "Waters of the US" and are regulated by the USACE due to hydrological connections to either the Salmon or Sandy Rivers.

Waters of the state means natural waterways including all tidal and nontidal bays, intermittent streams, constantly flowing streams, lakes, wetlands and other bodies of water in this state, navigable and nonnavigable, including that portion of the Pacific Ocean which is in the boundaries of this state (ORS 196.800(14) and 141-085-0010 and 0015).}

Waters of the U.S.--The U.S. Army Corps of Engineers requires review of impacts to what are called Waters of the U.S. Waters of the U.S. includes most traditional waterways such as rivers, streams, the ocean, and lakes, but also includes drainage ditches; wetlands and sometimes isolated water bodies like naturally-occurring ponds; buffalo wallows; glacier lakes; and other similar bodies of water, if these bodies of waters are either navigable or were navigable at any time; if these water features, like drainage ditches, drain into a traditional waterway; or the isolated water features are used for interstate commerce. Interstate commerce can include fishing and waterfowl hunting. Recent U.S. Supreme Court rulings have failed to provide clearer definitions of what constitutes a hydrologic connection to a Waters of the U.S., so most of these water features remain subject to regulation by the USACE. The Code of Federal Regulations (CFR), Section 328 includes the formal definition of Waters of the U.S.

How will the project affect wetlands and water resources?

Permanent Effects: The project is designed to avoid the wetlands. No permanent wetland impacts are expected for the proposed Build Alternative or for the No Build Alternative.

Temporary Effects: Temporary impacts to wetlands include approximately 0.03 acre of wetland ditch that may be affected by construction activities. The wetland on the north side of the highway includes a portion of linear wetland ditch that is adjacent to the widened portion of the highway and is likely to be impacted by construction activities. The temporary impacts are associated with construction activities adjacent to the new facility and the linear wetland ditch and would be restored by re-grading and revegetation after construction is finished.

Indirect Impacts: This project is not expected to have any indirect adverse impacts on any wetlands or waters of the State or waters of the U.S. Indirect impacts "…are caused by the action and are later in time or farther removed in distance, 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, including ecosystems." (Council on Environmental Quality (CEQ), Section 1508.8).

The project may result in an improvement in overall water quality in the local area due to the construction of the water quality treatment facilities planned for the project, and may improve drainage in the area by providing stormwater detention for highway run-off.

Improving the facility to address safety issues would lessen the likelihood of crashes, which would reduce the potential for pollutant spills that may impact waterways or wetlands.

Cumulative Impacts: This project is not expected to result in adverse cumulative impacts, either immediately associated with the design of the proposed project, or through longer associated development or activity generated by the current project. The net water quality in the roadside drainage ditches and in those ditches that drain into either the Salmon River or the Sandy River is expected to improve as a result of this project.

> **Cumulative impacts** are those that result "…from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."
> (CEQ, Section 1508.7)

Traffic levels on US 26 are expected to increase with corresponding increases in development in the project corridor. Several projects have already been constructed to provide increased capacity in the corridor to the east, and an FEIS for improvements in the Mt. Hood corridor between Rhododendron and the Oregon Highway 35 junction was published in 1986. US 26 west of the project has already been improved to four-lanes, with some left- and right-turn lanes at higher volume intersections. However, due to a high accident rate, the section west of the project is designated a "Safety Corridor" and safety improvements are being considered that will improve safety, but are not likely to change the current configuration of the highway or to affect resources outside of the existing highway footprint.

Three sections of US 26 west and east of the proposed project are scheduled for pavement preservation work. These sections will be assessed for other minor improvements, if needed. However, this work would not add any additional paving or impervious surface, as currently conceived, and would not affect any wetlands or regulated waters. If additional pavement would be added due to any of these projects, water quality treatment and storm water run-off detention/retention would be included in the projects.

What will be done to mitigate impacts on wetlands and water resources?

Existing wetlands would be avoided: The original proposed widening of the highway to the north would have used 3:1 slopes, which would have impacted a portion of the wetland located on the north side of the highway. To avoid this, ODOT proposes to steepen the slopes between the highway and the wetland and/or install guardrail at the edge of the highway along the length of the wetland. No fill is proposed on the southern side of the highway, thus the wetland located there would not be impacted.

Existing wetlands would be protected: ODOT would ensure protection for wetlands as follows:

- Fence off wetland no-work zones using pedestrian safety fence or approved equivalent.
- Except as authorized by the Project Manager for the purpose of installing or maintaining approved wetland protective measures, keep all persons, equipment and materials off wetlands.
- Install all site protection for wetlands required by the Plans and Special Provisions prior to staging equipment or starting work near the site(s).

The Project Manager would have the authority to bar from the Project any person entering a protected site other than for the purpose of installing or maintaining protective measures.

Regulated drainage ditches would be replaced: Approximately 2,010 linear ft. (0.09 acre) of jurisdictional highway drainage ditches are expected to be impacted by the proposed highway project. These impacted drainages would be replaced at a minimum of 1:1 acreage since the existing drainage ditches provide functions that must be replaced by the new project. The replacement ditches would be designed with a flat-bottom and seeded with appropriate native herbaceous species that would provide required erosion control and water quality functions.

The temporary impacts would be minimized: Construction in this area would be done from the roadway when possible, and construction activities off the roadway in the wetland area would be restricted to the least disruptive to accomplish the necessary work. This would limit compaction of soils and disruption of surface and sub-surface hydrology.

Temporary impacts would also be minimized by installing and maintaining erosion control plans as per ODOT's best management practices.

Restoration would take place: The following measures would ensure that all areas disturbed by construction activities would be restored:

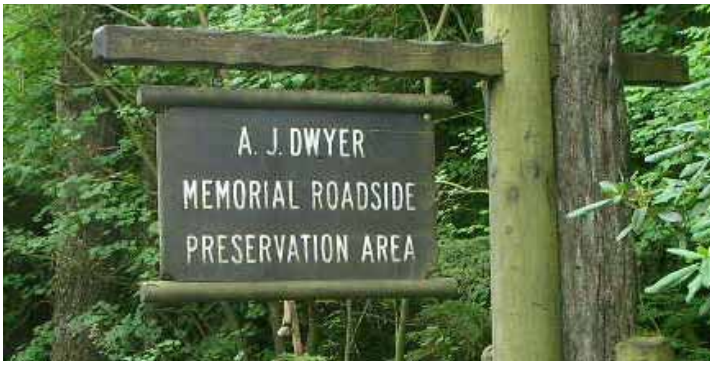
- Re-grading the surface areas to match the elevations and grades of the adjacent undisturbed areas
- Seeding the disturbed ground with ecologically appropriate native grass species
- Re-planting the disturbed areas with appropriate native shrub and tree species

3.4 Biological Resources

What is the setting for biological resources?

The proposed project is located in the Western Cascades Lowlands and Valleys ecoregion of Oregon. The Sandy River is north of the project area and the Salmon River, a tributary of the Sandy River, meanders to the south of the project area. The climate is mild with cool, wet winters and dry, warm summers. Precipitation is predominantly rainfall, although the snow level occasionally drops down to the project elevation (1,200 feet) during the winter. Summer temperatures range between 47 and 78 degrees F. while winter temperatures range between 31 and 41 degrees F. The landscape is relatively flat in the immediate project area, as part of the Salmon River floodplain. Steep mountains rise along either side of the river valley to the north and south.

Coniferous forests dominated by Douglas-fir line both sides of the highway. A row of mature and large diameter conifers generally greater than 24 inches dbh (diameter at breast height) line the north side of US 26 along much of the project corridor. Smaller and more widely scattered trees occur to the north where parcels have been cleared and thinned for rural development and road building. The Bureau of Land Management (BLM) administers federal land located in the middle of the project area. This land includes the Wildwood Recreation Site and the Dwyer Area Roadside Memorial Preservation Area (Dwyer Area). The Dwyer Area, located on the north side of US 26, contains a fairly dense stand of second growth Douglas-fir forest. East and west of the Dwyer Area are thinned stands of coniferous forest among various commercial developments, such as campgrounds and vacant lots.



According to the *Wildwood to Rhododendron, Mt. Hood Highway Draft Environmental Impact Statement* (DEIS) for the project corridor, most of the forest stands in the region were harvested in the 1930s (FHWA 1985). Based on the small sizes and scattered distribution of the trees, it appears that most of the forested private properties have been thinned since the DEIS was published. The Dwyer Area contains late-successional Douglas-fir forest that is believed to have been established in 1855 (FHWA 1985).

> **Late successional** or **late seral** are forests or stands consisting of trees and structural attributes and supporting biological communities and processes associated with mature and/or old-growth forests (FEMAT pp. 41, 1016, 1017).

What are special status species?

Special status species include those that are listed as endangered, threatened, candidate, or proposed under the state and federal Endangered Species Act, state sensitive species, federal species of concern, and species included in the BLM's sensitive species management program. ODOT and BLM developed a coordinated species search list of special status species that may occur in the vicinity of the Wildwood-Wemme Project. The coordinated species list is divided into a vascular plant list, a terrestrial wildlife species list, and a non-vascular plant list based on the separate field surveys performed for each of the three species groupings. See Tables 3-2, 3-3, 3-4. Table 3-5 lists Federally listed fish species.

What special status wildlife species are found in the area?

Although the project area contains suitable habitat for several special status wildlife species, only the Oregon slender salamander was found on site. Field surveys focused on verifying habitat for species that could occur in the vicinity of the study area based on existing habitat, and were not conducted to search for bald eagles or spotted owls which require specific survey protocol not followed in these general habitat surveys. Annual surveys for bald eagle nest location information (Issacs and Anthony 2004) were used to assess the potential for bald eagles or bald eagle habitat to occur within the study area. Spotted owl surveys were not completed; for the purposes of this project it is assumed this species could occur in the area based on the presence of BLM mapped roosting/foraging habitat. See Table 3-2.

Oregon Slender Salamander

What special status fish species occur in the area?

Of several special status fish species with the potential to occur in the Salmon and Sandy Rivers, only Chinook salmon and steelhead trout have critical habitat. Special status fish species with the potential to occur in the Salmon and Sandy Rivers are listed in Table 3-3.

Does stormwater from the project area flow to fish bearing streams?

Water quality is important for the health of fish and stormwater runoff has the potential to affect the water quality and hence the fish in nearby streams.

During the wet season stormwater drainage connects, indirectly, to both the Sandy and Salmon Rivers. During summer dry months there is no hydraulic surface water connections between the project area and receiving waters. On January 30, 2006, ODOT and URS Corp. biologists surveyed the study area for any surface water connections between the existing and proposed stormwater drainage system and either the Sandy or Salmon River. The survey, timed during the wet season in order to identify all surface water connections, revealed a seasonal connection between the project area stormwater system and an unnamed seasonal stream that flows northwest to the Sandy River. In addition, drainage from wetlands at the southwest end of the project enters into a piped stormwater system near the entrance to Mt. Hood Village. The storm drainage system discharges into an unnamed creek on the south side of US 26 that flows south to the Salmon River.

Table 3-2
Special Status Wildlife Species Potentially Occurring in the Wildwood-Wemme Study Area

Scientific Name	Common Name	Status [1] (Fed/State/BLM)	Habitat
MAMMALS			
Arborimus longicaudus longicaudus	Red tree vole	SOC	Large conifer stands greater than 300 acres that occur at less than 3,000 feet in the Western hemlock of Pacific silver fir vegetation zones. Secondary habitat is similar, but smaller (75 to 300 acres).
BIRDS			
Accipiter gentilis	Northern goshawk	SOC/SC/BS	Coniferous forest.
Haliaeetus leucocephalus	Bald eagle	LT/LT/BS	Tall trees near large bodies of water.
Strix occidentalis caurina	Northern spotted owl	LT/LT/-	Prefers mature and old-growth conifer forests with large down logs, standing snags in various stages of decay, high canopy closure and a high degree of vertical stand structure.
AMPHIBIANS			
Batrachoseps wrighti	Oregon slender salamander	SOC/SU/BS	West slope of Cascades. Prefers down logs and woody material in more advanced stages of decay. Most common in mature and old-growth conifer forests.
Plethodon larsellii	Larch Mountain salamander	SOC/SV/BA	Talus and coarse woody debris in older forests.
INVERTEBRATES			
Cryptomastix devia	Puget Oregonian (snail)	-/-/BS	Mature and old growth forests, typically under hardwood logs and leaf litter, rocks and talus, in litter under sword ferns growing under hardwood trees and shrubs, and under moss growing on big leaf maple trunks.
Derocerus hesperium	Evening fieldslug	-/-/BS	Generally thought to occur in wet areas in forested habitat in a variety of low vegetation, litter, debris and rocks.
Gliabates oregonius	Salamander slug	-/-/BS	Type locality is in leaf litter under bushes in mature conifer forest at elevation of 600' in east side of the Oregon Coast Range.

Source: Oregon Natural Heritage Information Center (ORNHIC) 2004 (recorded within 5 miles of study area).

[1]Status Legend:

Federal ESA: LT = Listed Threatened, SOC = Species of Concern

State ESA: LT = Listed Threatened, SC = Candidate for listing, SU = status undetermined, SV = status vulnerable

BLM: BA = Bureau Assessment; BS = Bureau Sensitive; BT = Bureau Tracking; O = listed in Oregon

Table 3-3
ESA Listed Fisheries Resources Occurring in the Project Vicinity

Common Name *Scientific Name*	Federal Status[1]	State Status[2]	Runs Present	Critical Habitat Designated	Critical Habitat Present in Project Vicinity (type)[3]
Lower Columbia River Chinook Salmon *Oncorhynchus tshawytscha*	**LT**	--	Spring / Fall	Yes	Yes (Spawning / Rearing)
Lower Columbia River Coho Salmon *Oncorhynchus kisutch*	**LT**	**LE**	NA	Under Development	No (Spawning / Rearing)[4]
Lower Columbia River Steelhead *Oncorhynchus mykiss*	**LT**	--	Winter / Summer	Yes	Yes (Spawning / Rearing)

[1] Federal Listings: LE = Listed Endangered, LT = Listed Threatened, C = Candidate Species.

[2] State Listings: LE = Listed Endangered, LT = Listed Threatened.

[3] Streamnet 2006, USFWS County List 2005, ORNHIC Project Species List 2004.

[4] While Critical Habitat has not been designated for LCR coho salmon, spawning / rearing habitat is mapped in project vicinity.