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

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[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.