

Attachment N.4F
Best Management Practices for Ecosystems
Resources

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Attachment N.4F Best Management Practices for Ecosystems Resources

1 BEST MANAGEMENT PRACTICES

This document describes best management practices (BMPs) that can be used to avoid and minimize construction and long-term impacts of the West Seattle Link Extension Project (the project) on sensitive ecosystem resources. These BMPs are either required by state or federal agencies to obtain permits required for the project or may be required to comply with typical permit conditions. They are based on Sound Transit's knowledge of permit requirements and experience for numerous other projects in the Puget Sound region.

2 DESIGN BEST MANAGEMENT PRACTICES TO MITIGATE OPERATIONAL EFFECTS

2.1 Wetlands, Streams and Waterbodies

Sound Transit would avoid or minimize adverse long-term effects of the project on wetlands, streams, and waterbodies through design, to the greatest extent practicable. Design aspects that would be incorporated into the project include elevated guideways; siting guideway columns and other elevated guideway features to span and avoid direct impacts on wetlands, streams, and waterbodies where practicable; and using retaining walls to reduce the footprint of at-grade guideway sections, thus reducing the extent of fill in wetlands.

Sound Transit would mitigate unavoidable impacts on wetlands, wetland and stream buffers, shorelines, and benthic habitats that are protected under federal, state, and local regulations. The project design would avoid direct impacts on Longfellow Creek, the only stream crossed by the project. Some unavoidable temporary impacts on Longfellow Creek's riparian area would be mitigated by improving stream habitat and riparian function by replanting affected areas with native vegetation. Unavoidable long-term impacts to wetlands, Longfellow Creek, or the Duwamish Waterway (also known as the Duwamish River) would also be mitigated through compensatory mitigation, in accordance with applicable federal, state, and local requirements and guidelines, to achieve no net loss of ecosystem function.

In addition, the following measures and BMPs would be implemented:

- Sound Transit would design permanent stormwater treatment infrastructure and flow-control measures to minimize impacts on stream water quality and flow. These features would meet the requirements of the City of Seattle.
- The proposed stormwater management for the project follows the *Sound Transit Design Criteria Manual* (Sound Transit 2021), which requires stormwater design for Sound Transit projects to conform to the requirements of the local jurisdictions. The project will comply with the local design manual, Volume 3: Project Stormwater Control of the City of Seattle Stormwater Manual (City of Seattle 2021), which exceeds the criteria required by the state (that is, by the Washington State Department of Ecology [Ecology]).

- Runoff treatment BMPs that are best suited to the site conditions and best capable of achieving the required levels of treatment would be selected, designed, and installed. These may include natural or engineered dispersion BMPs; biofiltration BMPs such as vegetated filter strips, rain gardens, biofiltration swales, or media filters; wet-pool BMPs; and infiltration BMPs.
- Water discharged from dewatering activities would be settled to reduce sediments before release. Discharge of dewatering water to a sanitary sewer may also be an option if permission can be secured from the local sewer utility.

2.2 Upland Vegetation and Wildlife Resources

Project effects on vegetation, wildlife, and wildlife habitat would be minimized to the greatest extent practicable by minimizing the footprint of light rail alignments through large greenbelts and connected riparian corridors. Sound Transit would work with staff at the United States Fish and Wildlife Service to conduct pre-construction surveys to determine the presence or absence of nesting migratory birds and assist Sound Transit in complying with the Migratory Bird Treaty Act. Also, Sound Transit would implement a weed-control plan to minimize the risk of introducing and spreading noxious and invasive species.

3 CONSTRUCTION-RELATED BEST MANAGEMENT PRACTICES

3.1 General Best Management Practices for All Sensitive Areas

Sound Transit's construction contractor would implement construction BMPs that would apply to all work in or around sensitive areas. The construction contractor would work within construction limits marked with fencing and signage to prevent unintended impacts on riparian vegetation, wetlands, woodlands, and other sensitive sites outside of the construction limits. The construction limits would be clearly marked with high-visibility construction fencing and signage prior to any ground-disturbing or construction-related activities. There would be no direct site disturbance outside of the construction limits.

Soil and rock stockpiles, excavated materials, and excess soil materials would be prevented from eroding into sensitive habitats, including stream channels, wetlands, riparian areas, and shorelines outside of the construction limits by high water or storm runoff. Before discharging or allowing runoff from the project site, the construction contractor would be required to develop, implement, and monitor a Temporary Erosion and Sediment Control plan to address potential erosion for the duration of construction. The contractor would implement the plan before discharging or allowing runoff from the site. Monitoring requirements specified in the plan would provide feedback to ensure that the erosion-control practices are operating properly and effectively.

BMPs would limit soil compaction in sensitive areas. For example, tracked equipment rather than tire-based equipment may be used in areas that are sensitive to adverse effects from soil compaction. Temporary work trestles or other measures that minimize impacts would be used where practical, such as along Southwest Genesee Street near the Longfellow Creek riparian area under some Delridge Build Alternatives.

Other measures to reduce the risk of erosion and sedimentation may include the following:

- Installing erosion-control blankets or an equally effective BMP on steep slopes that are susceptible to erosion and where ground-disturbing activities have occurred, in order to prevent erosion and assist with establishment of native vegetation.
- Covering temporarily stored materials with plastic or other impervious material during rain events to prevent sediments from being washed from the storage area to surface waters.
- Inspecting temporary and permanent erosion and sedimentation control measures on a regular basis and maintaining and repairing the measures to ensure continued performance of their intended function.
- Inspecting silt fences after each rainfall, and at least daily during periods of prolonged rainfall.

3.2 Fish and Aquatic Habitat Protection

All work below the ordinary high water mark of marine and fresh water waterbodies would comply with the terms and conditions set forth in the Hydraulic Project Approval issued for the project by the Washington Department of Fish and Wildlife. The Hydraulic Project Approval program is the vehicle through which Washington Department of Fish and Wildlife regulates activities that affect the bed or flow of waters of the state for the protection of fish life. A Hydraulic Project Approval is required for construction or structural work associated with any bridge structure or culvert construction within or below the ordinary high water mark of waters of the state. Hydraulic Project Approvals typically specify provisions designed to avoid or minimize the potential for adverse effects on habitat in receiving waters. Provisions required for the project could include restrictions on the timing of construction below the ordinary high water mark and other measures designed to avoid or minimize the potential for construction activities to deliver sediment or pollutants to streams and to minimize disturbance of the benthic community from anchors, barge spuds, or other equipment used to secure barges. To reduce the risk of adverse effects on migrating salmonids during project construction, Sound Transit would require construction contractors to direct lighting away from fish-bearing waters and to place hoods or shields on lights, as needed, to minimize the amount of backlight or dispersed light cast toward the water's surface.

Any temporarily affected riparian area or shoreline with existing vegetation would be permanently restored after in-water work with plantings of native or other woody and herbaceous species approved by the City of Seattle. Bank protection would follow the guidelines set forth in Washington Department of Fish and Wildlife's *Integrated Streambank Protection Guidelines* (Washington State Aquatic Habitat Guidelines Program 2003) or Seattle's Shoreline Master Plan (Seattle Municipal Code Section 23.60A), and would be approved by the City of Seattle.

3.3 Water Quality Protection

The federal Clean Water Act established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System (NPDES) permit program, which is administered by the United States Environmental Protection Agency. The Environmental Protection Agency has delegated responsibility to administer the NPDES permit program to the State of Washington on the basis of Chapter 90.48 of the Revised Code of Washington, which defines Ecology's authority and obligations in administering the wastewater discharge permit program.

The project would obtain and adhere to a NPDES construction stormwater general permit to reduce or eliminate stormwater pollution and other impacts on surface waters. The construction contractor would be required to adhere to water quality standards as stated in the Clean Water Act Section 401 Water Quality Certificate and the NPDES permit issued for the project.

Ecology's construction stormwater general permit is required for certain construction activities. The goal of the permit program is to reduce or eliminate stormwater pollution and other impacts on surface waters. The project must complete a Notice of Intent for coverage under the permit. A Construction Stormwater Pollution Prevention Plan approved by Ecology would also be implemented before the start of construction. The plan would include BMPs to prevent erosion, prevent sedimentation, and identify, reduce, eliminate, or prevent stormwater contamination and water pollution from construction activities. The Stormwater Pollution Prevention Plan would include each of the following plans:

- Temporary Erosion and Sediment Control Plan – This plan would outline the design and construction specifications for BMPs to be used to identify, reduce, eliminate, or prevent sediment and erosion problems.
- Spill Prevention, Control, and Countermeasures Plan – This plan would outline requirements for and implementation of spill prevention, inspection protocols, equipment and material containment measures, and spill response procedures.
- Concrete Containment and Disposal Plan – This plan would outline the management, containment, and disposal of concrete debris, slurry, and dust, and would discuss BMPs that would be used to contain, collect, and dispose of residue and slurry.
- Dewatering Plan – This plan would outline procedures for pumping groundwater away from the construction area and for storing (as necessary), testing, treating (as necessary), and discharging or disposing of the dewatering water.
- Fugitive Dust Plan – This plan would outline measures to prevent the generation of fugitive dust from exposed soil, construction traffic, and material stockpiles.

Turbid water produced (including untreated water from dewatering activities) would be prevented from discharging to fish-bearing waters or wetlands. Turbid wastewater may be routed to temporary or permanent detention facilities, or to upland areas that provide adequate rates of infiltration.

In accordance with conditions of a typical Hydraulic Project Approval, heavy equipment used during the course of in-water work would operate from above the ordinary high water mark wherever possible. Use of equipment below the ordinary high water mark would be limited to that necessary to gain position for work. Drive mechanisms would not enter or operate below the ordinary high water mark, except under the terms of the Hydraulic Project Approval. Work areas below the ordinary high water mark would be isolated from other surface waters with a cofferdam, turbidity curtain, or similar system to prevent suspended sediment or pollutants from leaving the work area.

Uncured concrete and/or concrete byproducts would be prevented from coming in contact with streams or water conveyed directly to streams during construction. A concrete truck chute cleanout area or equally effective BMP would be established to properly contain wet concrete. Any water having direct contact with uncured concrete would be contained and treated or removed from the site (as appropriate) to prevent discharge to streams, waterbodies, or wetlands. If construction occurs over Longfellow Creek, protections would be placed to ensure debris did not fall into the creek.

If permanent footings or drilled or pile-driven shafts are installed below the ordinary high water mark in the Duwamish Waterway or in wetlands along Longfellow Creek, they would be installed in a manner consistent with Section 404 and other permits issued for the project by the United States Army Corps of Engineers and other parties (as applicable). When constructing drilled shafts, the contractor would ensure that all drilling equipment, drill recovery and recycling pits, and any waste or spoil produced are properly contained to prevent discharge of drill wastes or fluids to any surface water or wetlands. Equipment (excluding track-mounted equipment, large cranes, and other relatively immobile equipment) would be refueled and maintenance activities conducted at a distance from the nearest wetlands, ditches, and flowing or standing water, as approved by regulatory permits. Appropriate spill prevention measures and fuel containment systems would be designed and implemented to completely contain a potential spill as specified in the Spill Prevention, Control, and Countermeasures Plan. As appropriate, equipment used for construction activities would be cleaned and inspected before arriving at the project site to ensure no potentially hazardous materials are introduced, no leaks are present, and the equipment is functioning properly. Wash water would not be discharged directly into any waterbody without pretreatment. Construction equipment and vehicles would be maintained to prevent them from leaking fuel or lubricants. Should a leak be detected on heavy equipment used for the project, the equipment would be repaired before use.

3.4 Vegetation and Wildlife Protection

The measures listed below would be implemented before and during project construction to avoid or minimize effects on vegetation and wildlife resources. These measures would be implemented along with others designed to avoid or minimize effects on other resources, such as streams, wetlands, and soils. The additional measures would be expected to provide more protection to vegetation and wildlife resources within and adjacent to streams and wetlands.

- Limit construction activity to a relatively small area immediately adjacent to the existing cleared area to minimize vegetation clearing and leave as much vegetation undisturbed as possible.
- As appropriate, restore areas temporarily affected by construction to pre-construction conditions or better through replanting or reseedling.
- Prepare and implement a revegetation plan that emphasizes the use of native species as appropriate. Landscape design will follow principles described in the *Sound Transit Design Criteria Manual* (Sound Transit 2021), which prioritizes maintaining native vegetation to the maximum extent feasible and emphasizes the use of native, adaptive, hardy, drought tolerant, low-maintenance material that can exist without supplemental water in the local climate after the establishment period.
- In accordance with the Migratory Bird Treaty Act, consult with United States Fish and Wildlife Service on methods to implement during construction to avoid impacts on migratory birds. Such methods could include conducting pre-construction surveys for migratory birds and/or placing restrictions on vegetation clearing during the breeding season for migratory birds.
- To minimize the extent of habitat disturbance associated with the removal of potential hazard trees, Sound Transit would identify and remove such trees on an individual basis, based on tree species, tree health, and distance from the alignment.

In addition to the measures identified above, a monitoring plan and adaptive management plan would be implemented, as directed by permit requirements, for revegetated sensitive areas or buffers. The plans would generally require verification of survival of all installed native trees and shrubs 1 year after installation, and maintenance of a specific plant density in successive years. Plant communities and the specific monitoring schedule would be identified in the revegetation plan.

3.5 Control of Noxious and Invasive Species

The most effective means of reducing the introduction and spread of noxious and invasive species are weed control and restoration of disturbed construction sites with native plant species suitable for the type of site disturbed. Weed control is important before and during construction. Per federal, state, and local requirements and guidance, Sound Transit would implement appropriate measures to minimize risk of introduction and spread of noxious and invasive species, including restoring temporarily disturbed areas immediately following construction in each project segment. To minimize use of herbicides and fertilizers, restoration of disturbed areas would include the use of mulching, ground cover, and other planting strategies that discourage growth of undesirable species.

4 REFERENCES

City of Seattle. 2021. *City of Seattle Stormwater Manual, Volume 3: Project Stormwater Control*. Seattle Public Utilities Department of Construction and Inspection.

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Sound Transit. 2021. *Sound Transit Design Criteria Manual*. Revision 5, Amendment 11.

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