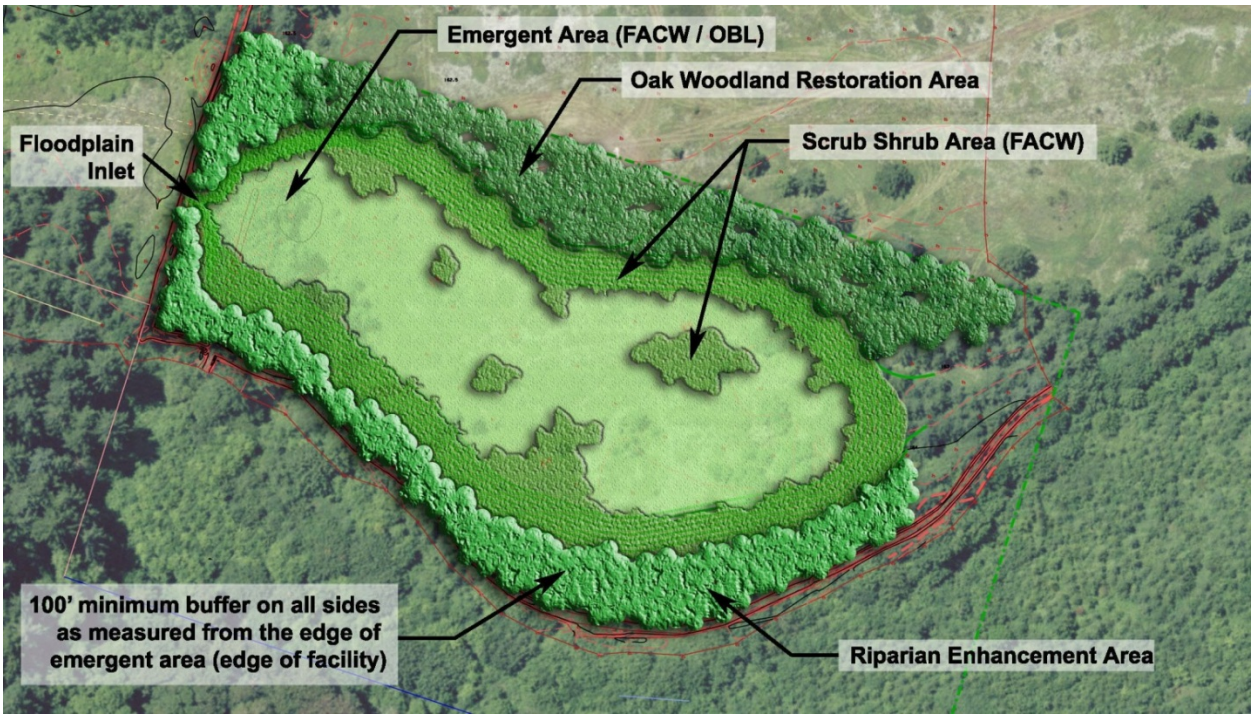
**Appendix B.**

**Comparative Innovative Stormwater Example: Grand Mound**

The 2009 WSDOT innovative Grand Mound stormwater treatment design resulted in a cost savings of approximately four million dollars, the amount that a series of concrete storage vaults would have cost WSDOT to design and construct.

Within the three highway segments with wetlands surrounding the existing highway footprint at Grand Mound, the only viable solution for meeting the project's stormwater flow control needs according to the Highway Runoff Manual was the construction of a series of concrete storage vaults. The constructed design created and enhanced 15 acres of wetlands instead. These 15 acres of created and enhanced wetlands resulted in significant environmental benefit compared to large concrete vaults that were the only Highway Runoff Manual stormwater facility options suitable for these site conditions.




The Grand Mound stormwater treatment plan was designed to manage and treat stormwater runoff from 8.44 acres of new impervious surface area. New impervious area added by the project was equal to 50% or less of the existing impervious area. Therefore, only the new impervious area (or equivalent area) was designed for treatment and detention per the Highway Runoff Manual. New impervious area added by the project was 8.44 acres. The Highway Runoff Manual (HRM) is an integral part of the WSDOT NPDES municipal stormwater permit.

**Light Link Rail Station Stormwater Design Concept: Lynnwood Transit Center Station**

Stormwater design options for the Lynnwood Transit Center Station include the development of a 6 to 7 story parking garage and a rail terminal. These structures will contribute to the amount of

impervious surfaces and the quantity of potential pollution bearing runoff. The land uses surrounding the proposed facility are highly urbanized with significant industrial development. A wetland exists to the southwest of the proposed intersection that receives significant contributions of runoff from the surrounding city and Scriber Lake via Scriber Creek. This wetland provides flood storage functions to Scriber Creek during rain events. Scriber Creek also bears coho salmon and cutthroat trout and the wetland provides water quality benefits and habitat for fish and other wildlife. A vacant undeveloped lot is located to the southeast of the wetland. Initial indications are that this undeveloped lot is the result of fill placed in a historical part of the Scriber Creek wetland complex.


Figure 1

Possible design concepts:

- Use wetland restoration and/or creation best management practices on an existing filled wetland or create new wetlands within upland areas of the undeveloped lot to provide enhanced stormwater treatment. By recreating and/or creating historical wetland dynamics to the filled area we would be improving the flood storage capacity of the wetland as well as ensuring better flow control dynamics within the system (ECY, 2014). We propose purchasing the vacant lot and constructing additional engineered stormwater treatment wetlands to better manage the surface water dynamics of Scriber Creek while providing water quality treatment (Figure 1). By enlarging the size of the total wetland area, stormwater would be better treated and potential flooding dangers could be mitigated. In addition to flood control, increased stormwater treatment could have an effect on reducing salmonid pre-spawn mortality within urbanized streams (NWIFC, 2012). This lot is adjacent to the Interurban Trail and has approximately 700 feet of frontage to the trail. This frontage would allow access for the public to tour an interactive

stormwater treatment wetland system filled with displays and educational components including discussions on wetland and their significance, the roles of plants in stormwater treatment, the hydrologic cycle, stormwater and it's potential effects (when untreated) on salmon pre-spawn mortality and chronological photography depicting urbanization of the area over time. Stormwater generated from the new construction at the transit center could potentially be routed through primary treatment (proposal 2) and released to this treatment wetland for "polishing" of the treated water before infiltrating to Scriber Creek.

- Build into parking garage and rail terminal an interactive cascading stormwater treatment system for rooftop and facility parking runoff treatment. Cascading teatment cells will follow stairwell routing within the building and walkways with descriptive signage explaining in brief detail the type of BMP in each cell and what that BMP specifically treats in the stormwater. Each treatment cell will contain a pre and post treatment viewing cell or open channel viewing segment so pedestrians can visually see stormwater treatment as it happens while passing by during rainfall. This would terminate to a small rain garden near the foot of stairs. For commuter amenities, the installation of rooftop electric car charging docks with solar inputs and installing solar paneling on all southward facing surfaces to reintroduce power to the facility and into the municipal grid.

**Click on the following links for more information:**

2011 WSDOT Excellence in Design Award Nomination: I-5 Blakeslee Junction to Grand Mound http://www.wsdot.wa.gov/NR/rdonlyres/04768100-BAB6-4CF6-A906-10DC458DB0EE/0/2011WSDOTExcellenceinEnvironmentalDesignNominationGersib3_31_11.pdf

WSDOT Highway Runoff Manual:
http://www.wsdot.wa.gov/Environment/WaterQuality/Runoff/HighwayRunoffManual.htm

WSDOT, Preliminary Draft Off-Site Stormwater Mitigation Report, I-5 Widening, Mellen Street to Grand Mound- Blakeslee to Grand Mound (2009), July 2007.

http://www.wsdot.wa.gov/NR/rdonlyres/E46B91F8-9FA8-4BE3-8346-8730050ADF9B/0/MGMOffsiteMitigationReportDraft_Final.pdf