CHAPTER 3

Minimum Requirements

Chapter 3 Contents

List of Tables

List of Figures

3-1 Introduction

Note to the designer: It is extremely important to take the time to thoroughly understand the minimum requirements presented in this chapter when making stormwater design decisions. A firm grasp of the chapter's terminology is essential; consult the manual's Glossary to clarify the intent and appropriate use of the terms used herein. Direct ~~your~~ questions regarding the minimum requirements and terminology to the R~~r~~egion H~~h~~ydraulics Engineer~~representative~~, the ~~Headquarters (~~HQ~~)~~ Hydraulics Section~~ighway Runoff Office~~, or the HQ Environmental Services Office.

This chapter describes the nine minimum requirements that apply to the planning and design of stormwater management facilities and best management practices (BMPs) for existing and new Washington State highways, rest areas, park and ride lots, ferry terminals, and highway maintenance facilities. ~~In order to plan and design stormwater management systems appropriately, determine specific parameters related to the project, such as new impervious area created, converted pervious area, area of land disturbance, presence of wetlands, and applicability of basin and watershed plans.~~ Projects ~~that~~ following the stormwater management practices in this manual achieve compliance with federal and state water quality regulations through the *presumptive approach*. A~~s an a~~lternatively, see Sections 1-2.2, 3-5~~2 4.8~~, and 5-3.6.3 for ~~a description of~~ us~~e~~ing the *demonstrative approach* to protect water resources ~~in lieu of following the stormwater management practices in this manual~~.

~~This chapter provides information on applying the following minimum requirements to various types and sizes of projects:~~

~~1. Stormwater Planning~~

~~2. Construction Stormwater Pollution Prevention~~

~~3. Source Control of Pollutants~~

~~4. Maintaining the Natural Drainage System~~

~~5. Runoff Treatment~~

~~6. Flow Control~~

~~7. Wetlands Protection~~

~~8. Incorporating Watershed/Basin Plansning into Stormwater Management~~

~~9. Operation and Maintenance~~

~~Not all of the minimum requirements apply to every project. The flowcharts in Figures 3-1, 3-2, and 3-3 are provided to assist the PEOyou in determining which requirements **may** apply. **The initial step in the process is to consult the flowcharts. The next critical step is to review Section 3-2 for the detailed information provided for each minimum requirement in terms of its objective, applicability (and potential exemptions), and guidelines for application**. Consult the Glossary to ensure complete understanding of the minimum requirements. Additional guidelines for retrofits are provided in Section 3-4.~~

~~***Note:*** For the purposes of this manual, the boundary between eastern and western Washington is the Cascade Crest, except in Klickitat County, where all of Klickitat County follows eastern Washington stormwater design criteriathe boundary line is the 16-inch mean annual precipitation contour (isopleth).~~

~~3-4~~3-2Applying ~~icability of~~ the HRM Minimum Requirements

~~3-4.1~~3-2.1 Project Thresholds

~~Unless otherwise noted,~~This section identifies the thresholds that determine the applicability of t~~T~~he ~~HRM~~ m~~all m~~inimum r~~r~~equirements ~~analysis (Figures 3-1, 3-2, and 3-3) must be used apply~~ throughout the state. ~~However,~~ I~~i~~n some instances, the ~~HRM has slightly different~~ design criteria~~, thresholds, and exemptions~~ is slightly different for eastern and western Washington ~~differ~~ due to different climatic, geologic, and ~~hydrogeologic~~hydrogeological conditions. Regional design criteria~~differences for each minimum requirement~~ are presented in Section 3-3. ~~under the *Applicability* sections.~~ There may be ~~A~~additional local requirements ~~controls~~ ~~may be required~~ for projects based on the exceptions listed in HRM Section 1-2.1~~, regardless of project type or size, as a result of adopted basin plans or to address special water quality concerns via a critical area ordinance or a requirement related to the total maximum daily load (TMDL)~~.

Note: For the purposes of this manual, the boundary between eastern and western Washington is the Cascade Crest, except in Klickitat County, where all of Klickitat County follows eastern Washington stormwater design criteria.

All nonexempt projects (see Section 3-2.2) are required to comply with Minimum Requirement 2. Projects that exceed certain thresholds are required to comply with additional minimum requirements. Use the flowcharts in Figures 3-1 and 3-2 to determine which minimum requirements apply at the project level. Use the flowchart in Figure 3-3 to determine which minimum requirements apply at the TDA level. Review Section 3-3 for detailed information about each minimum requirement. Consult the Glossary to gain a clear understanding of the following terms, which are essential for correctly assessing minimum requirement applicability:

~~WSDOT projects shall use the Stormwater Design Documentation Spreadsheet (SDDS) to determine analyze which HRM Minimum Requirements apply Applicability to the project and to each threshold discharge area (TDA), if applicable. The spreadsheet is located at: www.wsdot.wa.gov/environment/waterquality/runoff/highwayrunoffmanual.htmwww.wsd~~

~~ot.wa.gov/Design/Hydraulics/HighwayRunoffManual.htm. An electronic copy of the SDDS must be sent to the Highway Runoff Program ManagerHQ Highway Runoff Program Manager once the hydraulic report has been approved and has received concurrence from the WSDOT Region Hydraulics Engineer or HQ Hydraulics Section.~~

~~All nonexempt projects (see Section 3-2.2) are required to comply with Minimum Requirement 2. In addition, Pprojects that exceed certain thresholds are required to comply with additional minimum requirements. Use Figures 3-1 and, 3-2, and 3-3 as the **initial step** and initial screen in determining which minimum requirements might apply at the project level. Figure 3-3 is the **second step** and secondary screen that determines whether minimum requirements apply at the TDA level. The **nextlast critical step** involves reviewing the detailed information provided for each applicable minimum requirement in Section 3-3.~~ Consult the Glossary to gain a clear understanding of the following terms, which are essential for correctly assessing minimum requirement applicability:

- New impervious surface
- Converted pervious surface
- Pollution-generating impervious surface (PGIS)
- Pollution-generating pervious surface (PGPS)
- Land-disturbing activity
- Native vegetation
- Non-road-related projects
- Existing roadway prism
- Project limits
- Replaced impervious surface
- Effective impervious surface
- Noneffective impervious surface
- Effective PGIS
- Noneffective PGIS
- Threshold discharge area (TDA)
- Net-new impervious surface

WSDOT projects shall use the Stormwater Design Documentation Spreadsheet (SDDS) to document which minimum requirements apply to the project and to each threshold discharge area (TDA), if applicable. The spreadsheet is located at: www.wsdot.wa.gov/Design/Hydraulics/HighwayRunoffManual.htm. An electronic copy of the SDDS must be sent to the HQ Highway Runoff Program Manager once the hydraulic report has been approved and has received concurrence from the WSDOT Region Hydraulics Engineer or HQ Hydraulics Section.

~~Upgrading by resurfacing state facilities from gravel to bituminous surface treatment (BST or "chip seal"), asphalt concrete pavement (ACP), or Portland cement concrete pavement (PCCP) is considered to be adding new impervious surfaces and is subject to the minimum requirements that are triggered when the thresholds are met.~~

~~Basin planning is encouraged and may be used to tailor applicable minimum requirements to a specific basin (see Minimum Requirement 8).~~

~~3-4.43~~-2.2 Exemptions

~~Some types of activities are fully or partially~~Unless otherwise indicated in this section the practices described in this section are exempt from the minimum requirements even if such practices meet the definition of new development or redevelopment. ~~These include some road maintenance/preservation practices and some underground utility projects. The road maintenance and preservation practices that are exempt from all the minimum requirements are:~~

- Upgrading by resurfacing ~~Washington State Department of Transportation (~~WSDOT~~)~~ facilities from BST to ACP or PCCP without expanding the amount of existing impervious area ~~of coverage~~.[1] [2]

The following practices are subject only to Minimum Requirement 2, Construction Stormwater Pollution Prevention:

- Underground utility projects that replace the ground surface with in-kind material or materials with similar runoff characteristics.
- ~~—~~Removing and replacing a concrete or asphalt roadway to base course, or subgrade or lower, without expanding or upgrading the impervious surfaces.
- ~~Repairing the roadway base or subgrade.~~

[1] This exemption is applicable only to WSDOT maintenance projects; whereas, the "gravel-to-BST" exemption in Ecology's stormwater management manuals is only available to local governments. For local governments, upgrades that involve resurfacing from BST to ACP or PCCP are considered new impervious surfaces and are not categorically exempt.

[2] Exemption applies to WSDOT maintenance projects only. Projects done by contractors will be subject to Minimum Requirement 2.

Step 1 Check whether any exemptions listed in Section 3-2.2 apply.

Step 2 Does the project have 2,000 square feet or more of new, replaced, or new plus replaced impervious surfaces?

OR

Does the project have land-disturbing activities of 7,000 square feet or more?

No → Apply Minimum Requirement 2.

Yes

Apply Minimum Requirements 1, 2, 3, and 4 to new and replaced impervious surfaces and to the land disturbed.

Step 3 Does the project add 5,000 square feet or more of new impervious surfaces?

OR

For western Washington projects, does the project convert ¾ acre or more of native vegetation to lawn or landscaped area?

OR

For western Washington projects, does the project convert 2.5 acres or more of native vegetation to pasture?

No → No additional requirements.

Yes

Delineate Threshold Discharge Areas (TDA) for the project ~~(Western Washington only)~~.

Minimum Requirement~~s~~ 6 applies to the new impervious surfaces and converted pervious surfaces on the project. Applicability at the TDA level may change based on triggers in Figure 3-3.

Minimum Requirements 7, 8, and 9 apply to the new impervious surfaces and converted pervious surfaces on the project.

Step 4 For road/parking lot-related projects (including pavement, shoulders, curbs, and sidewalks) adding 5,000 square feet or more of new impervious surfaces: Do new impervious surfaces add 50% or more to the existing impervious surfaces within the project limits?

OR

For non-road-related projects (such as rest areas, maintenance facilities, or ferry terminal buildings): Is the total of new plus replaced impervious surfaces 5,000 square feet or more, AND does the value of the proposed improvements—including interior improvements—exceed 50% of the replacement value of the existing site improvements?

→ Minimum Requirement~~s~~ 6 does not apply~~ies~~ to the replaced impervious surfaces on the project. ~~Applicability at the~~

Yes

Minimum Requirement~~s~~ 6 applies to the replaced impervious surfaces on the project. Applicability at the TDA level may change based on triggers in Figure 3-3.

Minimum Requirements 7, 8, and 9 also apply to the replaced impervious surfaces on the project.

→ Continue to **Step 5** in Figure 3-2.

Figure 3-1 Minimum ~~r~~Requirement applicability at project level.

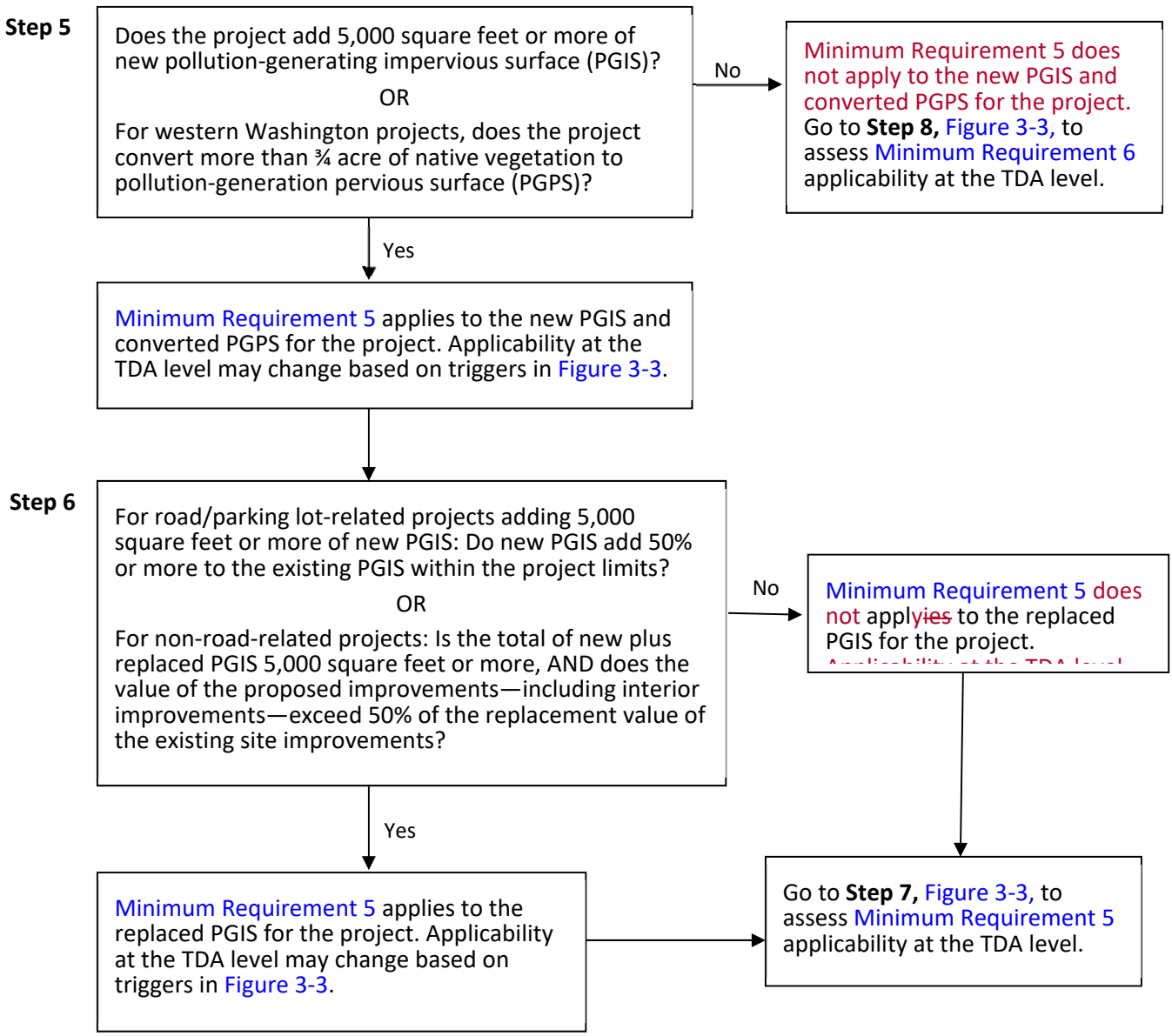
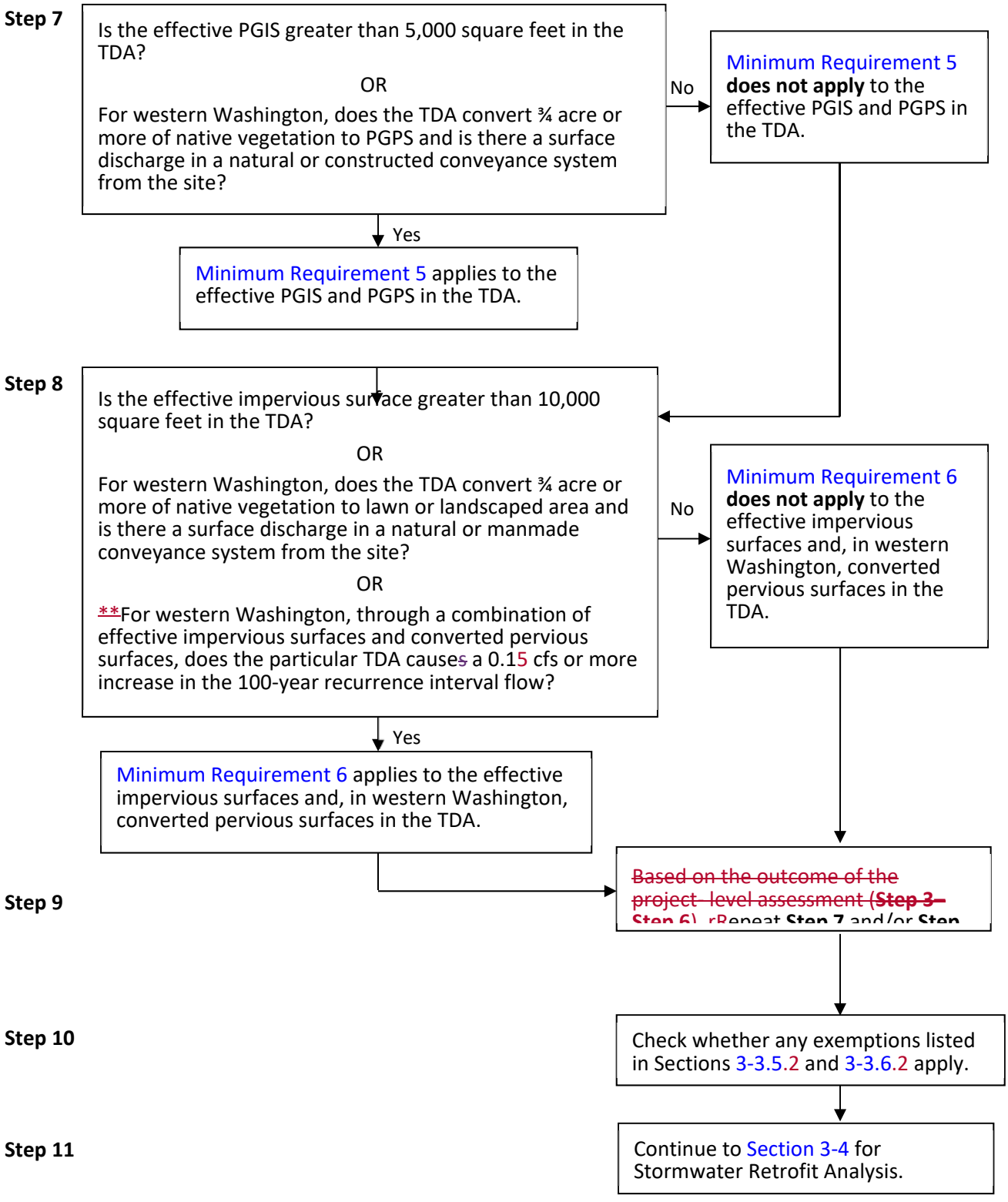


Figure 3-2 Minimum R~~r~~equirement applicability at project level (continued).


Step 7
Is the effective PGIS greater than 5,000 square feet in the TDA?
OR
For western Washington, does the TDA convert ¾ acre or more of native vegetation to PGPS and is there a surface discharge in a natural or constructed conveyance system from the site?
No
Minimum Requirement 5 **does not apply** to the effective PGIS and PGPS in the TDA.
Yes
Minimum Requirement 5 applies to the effective PGIS and PGPS in the TDA.
Step 8
Is the effective impervious surface greater than 10,000 square feet in the TDA?
OR
For western Washington, does the TDA convert ¾ acre or more of native vegetation to lawn or landscaped area and is there a surface discharge in a natural or manmade conveyance system from the site?
OR
**For western Washington, through a combination of effective impervious surfaces and converted pervious surfaces, does the particular TDA causes a 0.15 cfs or more increase in the 100-year recurrence interval flow?
No
Minimum Requirement 6 **does not apply** to the effective impervious surfaces and, in western Washington, converted pervious surfaces in the TDA.
Yes
Minimum Requirement 6 applies to the effective impervious surfaces and, in western Washington, converted pervious surfaces in the TDA.
Step 9
Based on the outcome of the project-level assessment (**Step 3–Step 6**), rRepeat **Step 7** and/or **Step**
Step 10
Check whether any exemptions listed in Sections 3-3.5.2 and 3-3.6.2 apply.
Step 11
Continue to Section 3-4 for Stormwater Retrofit Analysis.

Note: For Figure 3-3, Minimum Requirements 1–4 and 7–9 still apply to all TDAs on the project, even though Minimum Requirements 5 and/or 6 may not apply to each TDA.

Figure 3-3 Minimum Rrequirement applicability at TDA level.

3-53-3Minimum Requirements

This section describes the minimum requirements for stormwater management at project sites. Consult Section 3-2 to determine which requirements apply to any given project. (See Chapter 5 for BMPs to use in meeting Minimum Requirements 3, 5, 6, 7, and 9, and the *Temporary Erosion and Sediment Control Manual* (TESCM) for BMPs to use in meeting Minimum Requirement 2.)

3-5.13-3.1 Minimum Requirement 1 – Stormwater Planning

The two main sStormwater planning shall consist of components of Minimum Requirement 1 are: Construction Stormwater Pollution Prevention Planning and Permanent Stormwater Control Planning.

Multiple documents are used to fulfill the objective of this requirement, since addressing stormwater management needs is thoroughly integrated into WSDOT's design, construction, and maintenance programs. WSDOT's construction stormwater pollution prevention planning components consist of Spill Prevention, Control, and Countermeasures (SPCC) plans and Temporary Erosion and Sediment Control (TESC) plans. WSDOT's permanent stormwater control planning components include Hydraulic Reports and aspects of the *Maintenance Manual*.

3-5.1.13-3.1.1 Objective

The sStormwater planning componentsdocuments must collectively demonstrate how stormwater management will be accomplished, both during project construction and in the final, developed condition.

3-5.1.23-3.1.2 Applicability

Minimum Requirement 1 applies to all nonexempt projects (See Section 3-2.2) that meet or exceed the thresholds described in Figure 3-1.

To meet the objectives of the stormwater planning requirement during construction, cContractors are required to prepare Spill Prevention, Control, and Countermeasures (SPCC) plans for all projects, since all projects have the potential to spill hazardous materials. All projects that disturb soil must also comply with the 132 Temporary Erosion and Sediment Control (TESC) elements (see Section 2-1.2 in the TESCM) and must apply the appropriate best management practices (BMPs) presented in the TESCM. WSDOT prepares a TESC plan if a construction project adds or replaces (removes existing road surface down to base course) more than 2,000 square feet of impervious surface or disturbs more than 7,000 square feet of soil. Projects that disturb fewer than 7,000 square feet of soil must address erosion control and

the 132 TESC elements; however, a stand-alone TESC plan is optional and plan sheets are not required. Both the SPCC and TESC plans must be kept on site or within reasonable access of the site during construction and may require updates with changing site conditions.

To meet the objectives of the stormwater planning requirement for the final, developed condition, permanent stormwater control planning requirements, WSDOT all projects that exceed the thresholds for HRM minimum requirements (especially minimum requirement 5 or 6) must prepares a Hydraulic Reports and follows guidelines in the HRM, *Hydraulics Manual*, and *Maintenance Manual*. The Hydraulic Report provides a complete record of the engineering justification for all drainage modifications and is prepared for all major and minor hydraulic projects based on guidelines in this manual as well as the *Hydraulics Manual*. As noted in the *Hydraulics Manual*, the Hydraulic Report must contain detailed descriptions of the following items:

- Existing and developed site hydrology
- Flow control and runoff treatment BMPssystems
- Conveyance system analysis and design
- Wetland hydrology analysis, if applicable
- Downstream analysis, if applicable

3-5.1.33-3.1.3 Guidelines

Multiple documents are used to fulfill the objective of this requirement, since addressing stormwater management needs is thoroughly integrated into WSDOT's design, construction, and maintenance programs. WSDOT's construction stormwater pollution prevention planning components consist of Spill Prevention, Control, and Countermeasures (SPCC) plans and Temporary Erosion and Sediment Control (TESC) plans. WSDOT's permanent stormwater control planning components include Hydraulic Reports and aspects of the HRM, *Hydraulics Manual*, and *Maintenance Manual*.

Instructions on how to prepare SPCC and TESC plans are provided in Minimum Requirement 2 and in the TESCM. Both the SPCC and TESC plans must be kept on site or within reasonable access of the site during construction and may require updates with changing site conditions.

Instructions on how to prepare Hydraulics Reports are provided in Chapter 1 of the *Hydraulics Manual*.

Stormwater runoff treatment and flow control BMP maintenance criteria for each BMP in Chapter 5 are included in Section 5-5. Additional standards for maintaining stormwater BMPs are found in the *Regional Road Maintenance/Endangered Species Act Program Guidelines* (www.wsdot.wa.gov/maintenance/roadside/esa.htm). The criteria and guidelines are designed to ensure all BMPs function at design performance levels and that the maintenance activities themselves are protective of water quality and its beneficial uses.

~~3-5.2~~3-3.2 Minimum Requirement 2 – Construction Stormwater Pollution Prevention

WSDOT's ~~The two components of~~ construction stormwater pollution prevention (SWPPP) components consist of~~are:~~

1. Temporary Erosion and Sediment Control (TESC) planning
2. Spill Prevention, Control, and Countermeasures (SPCC) planning

Erosion control is required to prevent erosion from damaging project sites, adjacent properties, and the environment. The emphasis of erosion control is to prevent the erosion process from starting by preserving native vegetation, limiting the amount of bare ground, and protecting slopes. A TESC plan must address the following elements, which are the same as the SWPPP elements outlined in Special Condition S9 of Ecology's 2017 *Construction Stormwater General Permit* and in the TESCM:

- Element 1: ~~Preserve Vegetation and~~ Mark clearing limits
- Element 2: Establish C~~c~~onstruction ~~a~~Access
- Element 3: Control F~~f~~low R~~r~~ates
- Element 4: Install S~~s~~ediment C~~c~~ontrols
- Element 5: Stabilize S~~s~~oils
- Element 6: Protect S~~s~~lopes
- Element 7: Protect D~~d~~rain ~~i~~Inlets
- Element 8: Stabilize ~~c~~Channels and O~~o~~utlets
- Element 9: Control P~~p~~ollutants
- Element 10: Control ~~d~~Dewatering
- Element 11: Maintain BMPs
- Element 12: Manage the P~~p~~roject
- Element 13: Protect L~~l~~ow-~~i~~Impact ~~d~~Development ~~BMPsfacilities~~Facilities

A spill prevention control and countermeasures (SPCC) plan is required on all projects to prevent and minimize spills that may contaminate soil or nearby waters of the state. The contractor prepares the SPCC plan in accordance with Standard Specification 1-07.15(1) and submits the plan to the Project Engineer to be reviewed and accepted before starting onsite construction activities. ~~All projects that involve mechanized equipment or construction materials that could potentially contaminate stormwater or soils require SPCC plans. The SPCC plan is a stand-alone document prepared by the contractor and contains the following:~~

The SPCC plan must contain the following components which further address Element 9: Control Pollutants listed above:

- Site information and project description
- Spill prevention and containment
- Spill response
- Material and equipment requirements
- Reporting information
- Program management
- Plans to contain preexisting contamination, if necessary

Detailed requirements for each of the~~se e~~Elements above are provided in the TESCM.

The TESC and SPCC plans must (1) demonstrate compliance with all of those detailed requirements, or (2) when site conditions warrant the exemption of an element(s), clearly document in the narrative why a requirement does not apply to the project. The TESC and SPCC plans shall be implemented beginning with initial land disturbance and until final stabilization. Sediment and erosion control BMPs shall be consistent with the BMPs contained in TESCM.

~~3-5.2.1~~3-3.2.1 Objective

The objective of construction stormwater pollution prevention is to ensure construction projects do not impair water quality by allowing sediment to discharge from the site or allowing pollutant spills. ~~Erosion control is required to prevent erosion from damaging project sites, adjacent properties, and the environment.~~ The emphasis of erosion control is to prevent the erosion process from starting by preserving native vegetation, limiting the amount of bare ground, and protecting slopes.

~~3-5.2.2~~3-3.2.2 Applicability

All nonexempt projects must address Construction Stormwater Pollution Prevention per Standard Specification 1.07.15(1). A~~n~~ ~~spill prevention control and countermeasures (~~SPCC~~)~~ plan is required on all projects to prevent and minimize spills that may contaminate soil or nearby waters of the state. All projects that disturb 7,000 square feet or more of land or add 2,000 square feet or more of new, replaced, or new plus replaced impervious surface must prepare a TESC plan in addition to a~~n~~ SPCC plan. ~~A spill prevention control and countermeasures (SPCC) plan is required on all projects to prevent and minimize spills that may contaminate soil or nearby waters of the state.~~

~~3-5.2.3~~3-3.2.3 Guidelines

Instructions on how to prepare SPCC and TESC plans are provided in the TESCM ~~.~~and ~~The contractor prepares the SPCC plan in accordance with~~ Standard Specification 1-07.15(1)~~ and submits the plan to the Project Engineer to be reviewed and accepted before starting onsite construction activities~~.

~~3-5.3~~3-3.3 Minimum Requirement 3 – Source Control of Pollutants

All known, available, and reasonable source control BMPs must be applied and must be selected, designed, and maintained in accordance with this manual.

~~3-5.3.1~~3-3.3.1 Objective

The intention of source control is to prevent pollutants from coming into contact and mixing with stormwater. In many cases, it is more cost-effective to apply source control than to remove pollutants after they have mixed with runoff. This is certainly the case for erosion control and spill prevention during the construction phase.

~~3-5.3.2~~3-3.3.2 Applicability

Minimum Requirement 3 applies to all nonexempt projects that meet or exceed the thresholds described in Figure 3-1. Source control (erosion control and spill prevention) applies to all projects during the construction phase per Minimum Requirement 2. Post construction source controls are employed programmatically via WSDOT's maintenance program. ~~Thus,~~ ~~I~~in instances where structural source control BMPs may not be sufficient, consult with the environmental support staff of the HQ Maintenance and Operations Office to explore operational source control BMP options that may be available to meet regulatory requirements.

Certain types of activities and facilities may require source control BMPs. Determine whether there are pollutant-generating activities or facilities in the project that warrant source controls. Source control BMPs for the activities listed in Section 5-2.1 must be specified to reduce pollutants. For detailed descriptions of the source control BMPs, see Chapter 2 of Volume IV of Ecology's *Stormwater Management Manual for Western Washington* (SWMMWW) or Chapter 8 of the *Stormwater Management Manual for Eastern Washington* (SWMMEW). Any deviations from the source control BMPs listed in either the SWMMWW or the SWMMEW must provide equivalent pollution source control benefits. The hydraulic report~~Project File~~ must include documentation for why the deviation is considered equivalent. Section 5-3.6.3 describes the process for seeking approval of such deviations. The project may have additional source control responsibilities per the exceptions listed in HRM 1-2.1~~as a result of area-specific pollution control plans (such as watershed/basin plans, water cleanup plans, groundwater management plans, or lake management plans), ordinances, and regulations~~.

~~3-5.3.3~~3-3.3.3 Guidelines

Source control BMPs include operational and structural BMPs:

- Operational BMPs are nonstructural practices that prevent (or reduce) pollutants from entering stormwater. Examples include preventative maintenance procedures; spill prevention and cleanup; and inspection of potential pollutant sources.

- Structural BMPs are physical, structural, or mechanical devices or facilities intended to prevent pollutants from entering stormwater. Examples include installation of vegetation for temporary and permanent erosion control; putting roofs over outside storage areas; and putting berms around potential pollutant source areas to prevent both stormwater run-on and pollutant run-off.

Many source control BMPs combine operational and structural characteristics. A construction phase example is slope protection using various types of covers: temporary covers (structural) and the active inspection and maintenance needed for effective use of the covers (operational). A post construction phase example is street sweeping: a sweeper (mechanical) and the sweeping schedule and procedures for its use (operational) collectively support the BMP.

For criteria on the design of construction-related source control BMPs, see the TESCM. For criteria on the design of source control BMPs for the post construction phase, see Section 5-2.1.

~~3-5.4~~3-3.4 Minimum Requirement 4 – Maintaining the Natural Drainage System

To the maximum extent practicable, natural drainage patterns must be maintained and discharges from the site must occur at the natural discharge~~outfall~~ locations. The manner by which runoff is discharged must not cause downstream erosion in receiving waters and downgradient properties. Discharge locations may~~Outfalls~~ require dispersal systems and/or energy-dissipation BMPs per *Hydraulics Manual* guidelines.

~~3-5.4.1~~3-3.4.1 Objective

The intent of maintaining the natural drainage system is to (1) preserve and utilize natural drainage systems to the fullest extent because of the multiple benefits such systems provide, and (2) prevent erosion at, and downstream of, the discharge location.

~~3-5.4.2~~3-3.4.2 Applicability

Minimum Requirement 4 applies to all nonexempt projects that meet or exceed the thresholds described in Figure 3-1, to the maximum extent practicable.

~~3-5.4.3~~3-3.4.3 Guidelines

When projects affect subsurface and/or surface water drainage, use strategies that minimize impacts and maintain hydrologic continuity. For example, road cuts on hill slopes or roads bisecting wetlands or ephemeral streams can affect subsurface water drainage. Ditching, channel straightening, channel lining, channel obliteration, and roads that bisect wetlands or perennial streams change surface water drainage and stream channel processes. Use the best available design practices to maintain hydrologic function and drainage patterns based on site geology, hydrology, and topography.

If flows for a given discharge location ~~outfall~~ are not channeled in the existing (preproject) condition, runoff concentrated by the proposed project must be discharged overland through a dispersal system or to surface water through an energy dissipater BMP before leaving the project ~~outfall~~. Typical *dispersal systems* are rock pads, dispersal trenches, level spreaders, and diffuser pipes. Typical *energy dissipaters* are rock pads and drop structures. These systems are listed in Sections 5-4.3.5 and 5-4.3.6.

In some instances, a diversion of flow from the existing (preproject) ~~discharge location~~ TDA may be beneficial to the downstream properties or receiving water bodies. Examples of where the diversion of flows may be warranted include (1) areas where preproject drainage conditions are contributing to active erosion of a stream channel in a heavily impervious basin, and (2) areas where preproject drainage patterns are exacerbating flooding of downstream properties. If it is determined that a diversion of flow from the natural discharge location may be warranted, contact the R~~r~~egion Hydraulics Engineer or ~~Headquarters (~~HQ~~)~~ Hydraulics staff. The diversion of flow from one TDA to another would be a deviation from Minimum Requirement 4 and would follow the guidelines in Section 3-5.

~~Minimum Requirement 5 – Runoff Treatment~~

3-3.5 Minimum Requirement 5 – Runoff Treatment

~~Runoff treatment must be provided for all nonexempt projects that meet the threshold described in Figures 3-1, 3-2, and 3-3.~~

Stormwater runoff treatment facilities shall be selected, designed, and maintained in accordance with the HRM.

~~3-5.4.4~~3-3.5.1 Objective

The purpose of runoff treatment is to reduce pollutant loads and concentrations in stormwater runoff using physical, biological, and chemical removal mechanisms to maintain or enhance beneficial uses of receiving waters. When site conditions are appropriate, infiltration can potentially be the most effective BMP for runoff treatment. ~~Meeting runoff treatment requirements may also be achieved through regional stormwater facilities.~~

~~3-5.4.5~~3-3.5.2 Runoff Treatment Exemptions

Any of the runoff treatment exemptions below may be negated by requirements set forth in a Total Maximum Daily Load (TMDL) or Ecology-approved Basin P~~TMDL related water cleanup p~~lan.

- ~~Runoff treatment is not required where no new pollution generating impervious surface (PGIS) is added. These include:~~

- ~~Projects where the only work involved is the addition of paved surfaces not intended for use by motor vehicles (such as sidewalks or bike/pedestrian trails) and that are separated from adjacent roadways.~~

- ~~Projects where the only work involved is an overlay or upgrade of existing bituminous surface treatment (BST or "chip seal"), asphalt concrete pavement (ACP), or Portland cement concrete pavement (PCCP) without an increase in impervious area. ***Note:*** Upgrading a facility from gravel surface to BST, ACP, or PCCP is considered an addition of new impervious surface and is subject to runoff treatment if the thresholds are met. (Applicable to WSDOT projects only.)~~

- Discharges to underground injection control (UIC) facilities may not require basic runoff treatment if the vadose zone matrix between the bottom of the facility and the water table provides adequate treatment capacity (see Section 4-5.~~0~~45).

~~3-5.4.6~~3-3.5.3 Applicability[3]

Minimum Requirement 5 applies to all nonexempt projects that meet or exceed the thresholds described in Figures 3-1, 3-2, and 3-3. Even if the threshold is not triggered, runoff from the applicable pollution-generating impervious surfaces (PGIS) and pollution-generating pervious surfaces (PGPS) must be dispersed and infiltrated to adjacent pervious areas when practicable. The extension of the roadway edge and the paving of gravel shoulders and lanes are new PGIS.

~~Projects not triggering the runoff treatment minimum requirement may still have the option to provide an opportunity based stormwater retrofit, especially if require treatment a high stormwater retrofit priority is if a specific deficiency within the project limits is identified within the project limits through the I-4 Stormwater Retrofit program. The decision to retrofit is made by the PEOproject office in collaboration with Rregion and Headquarters Hydraulics, Region Pprogram mManagement, and the HQ eEnvironmental Sservices Officestaff.~~

Existing n~~N~~atural dispersion BMPs ~~areas meeting the requirements of~~ (BMP FC.01) must be identified along the project as a part of determining whether the particular TDA exceeds thresholds in Figure 3-3, Step 7. Those effective PGIS areas that are flowing to an existing (preproject) natural dispersion BMP~~area~~ can be subtracted as noneffective PGIS.

Equivalent area treatment is allowable for PGIS areas that are within the same TDA.~~drain to the same receiving waters~~ The equivalent PGIS area must have an ADT that is greater than or equal to the original PGIS area. ~~and have the same pollutant loading characteristics.~~ While the equivalent area will receive treatment, the new or expanded discharge must not cause a violation of surface water quality standards. Additional information on equivalent area treatment is provided in Section 4-3.5~~.1~~.4.

Projects not triggering the runoff treatment minimum requirement still have the option to provide runoff treatment. Any treatment provided in this case would be considered an opportunity-based stormwater retrofit. Retrofits should be considered especially if a high stormwater retrofit priority is identified within the project limits through the I-4 Stormwater Retrofit program. The decision to retrofit is made by the PEO in collaboration with Region and Headquarters Hydraulics, Region Program Management, and the HQ Environmental Services Office. Additional information on opportunity-based stormwater retrofit is provided in Section 3-4.3.

~~3-5.4.7~~3-3.5.4 Guidelines

Runoff treatment design involves the following three steps:

[3] Consult the Glossary for the following key terms: *converted pervious surface*, *impervious surface*, *new PGIS*, *PGPS*, *project limits*, *replaced impervious surface*, *effective PGIS*, *noneffective PGIS*, and *threshold discharge area (TDA)*.

1. Determine the specific runoff treatment requirements (basic treatment, enhanced treatment, oil control, and/or phosphorus control). Refer to *Treatment Targets* below.
2. Choose the method(s) of runoff treatment that will best meet the treatment requirements, taking into account the constraints/opportunities presented by the project's context and operation and maintenance. Refer to Sections 2-4, 4-3.1, 5-3.5, and 5-5.
3. Design runoff treatment facilities based on the sizing criteria. Refer to *Criteria for Sizing Runoff Treatment Facilities* below and Section 5-4.1.

WSDOT's stormwater management design philosophy (see Section 2-3.2) seeks to mimic natural hydrology, where feasible, through the dispersional and infiltration of runoff using low-impact development (LID) practices. The extent to which runoff flow rates and volumes can be (or remain) dispersed and then infiltrated determines the types and sizing of runoff treatment options available. This aspect of runoff treatment planning and design is discussed in detail in Sections 2-3.2, 4-3.5.1, 5-2, and 5-3.

Existing low class wStormwater facilities are not allowed within a jurisdictional wetland or its natural vegetated buffer, except for conveyance systems allowed by applicable permit(s) or as allowed in a wetland mitigation plan. Wetlands may be considered for runoff treatment if the wetlands meets the criteria for hydrologic modification (see Minimum Requirement 6 and Section 4-6 on wetland hydroperiods) and Minimum Requirement 7.

Sections 4-3 (western Washington) and 4-4 (eastern Washington) provide design criteria for sizing runoff treatment facilities, including a description of how to conduct the hydrological analysis to derive treatment volumes and flow rates for treatment facilities. Section 5-4 provides direction on how to design the treatment facilities chosen for the project.

Treatment Targets

There are four runoff treatment targets: *Basic Treatment* (total suspended solids removal), *Enhanced Treatment* (dissolved metals removal), *Oil Control*, and *Phosphorus Control*. Table 3-1 describes applicable treatment targets and performance goals for roadway projects. For nonroadway applications, refer to Ecology's SWMMEW or SWMMWW. Table 3-2 identifies receiving waters that do notonly require EnhancedBasic Treatment for direct discharges.

Section 5-3.56 provides information on alternative BMP options available to meet each of the four treatment targets. Per Figure 5-3, the PEO you must exhaust all approved runoff treatment BMP options before using an alternative BMP option from Section 5-3.56. Treatment facilities, designed in accordance with the design criteria presented in this manual, are presumed to meet the applicable performance goals.

You may also use an adopted and implemented Basin Plan, Total Maximum Daily Load (TMDL) Plan, or Water Cleanup Plan to set runoff treatment requirements that are tailored to a specific basin. However, treatment requirements must not be less than those achieved by facilities designed for Basic Treatment.

Table 3-1 Runoff treatment targets and applications for roadway projects.

Treatment Target	Application	Performance Goal
Basic Treatment	All project ~~threshold discharge areas (~~TDAs~~)~~ where runoff treatment threshold is met or exceeded. Table 3 2 identifies receiving waters that only require Basic Treatment for direct discharges.	80% removal of total suspended solids (TSS)
Enhanced Treatment (dissolved metals)	Same as for Basic Treatment ~~and~~AND does not discharge to Basic Treatment receiving water body (listed in Table 3-2) AND 1. Roadways within *Urban Growth Areas* (UGAs): • Fully controlled or partially controlled limited access highways with a design year ADT[1] ≥ 15,000 OR • All other r~~R~~oadways ~~within *Urban Growth Areas* (UGAs)~~ with a design year A~~A~~DT[1] ≥ 7,500 OR 2. Roadways outside of UGAs: • Roads with a design year ADT ≥ 15,000 ~~OR~~ ~~——~~Required by an Ecology-approved~~dopted~~ B~~b~~asin P~~p~~lan ~~or water cleanup plan~~or ~~/~~TMDL, as described in Sections 2-4.2 and 2-4.7. 3. ~~(See Table 3-2 for Basic Treatment receiving water bodies.)~~	Provide a higher rate of removal of dissolved metals than Basic Treatment facilities for influent concentrations ranging from 0.00~~5~~3 to 0.02 mg/L for dissolved copper and 0.02-0.3 mg/L for dissolved zinc
Oil Control	Same as for Basic Treatment AND 1. There is an intersection with existing ADTs where either ≥15,000 vehicles (ADT) must stop to cross a roadway with ≥25,000 vehicles (ADT) or vice versa[2] excluding projects proposing primarily pedestrian or bicycle improvements O~~O~~R 2. Rest areas with an expected trip end count greater than or equal to 300 vehicles per day[3] OR 3. Maintenance facilities that park, store, or maintain 25 or more vehicles (trucks or heavy equipment) that exceed 10 tons gross weight each[3] OR 4. Eastern Washington roadways with ADT >30,000.	No ongoing or recurring visible sheen and 24-hr average total petroleum hydrocarbon concentration of not greater than 10 mg/L with a maximum of 15 mg/L for a discrete (grab) sample
Phosphorus Control	Same as for Basic Treatment AND t~~T~~he project is located in a designated area requiring phosphorus control as prescribed through an Ecology-approved~~adopted~~ B~~b~~asin P~~p~~lan ~~or water cleanup plan~~or~~/~~ TMDL.[~~43~~]	50% removal of total phosphorus (TP) for influent concentrations ranging from 0.1 to 0.5 mg/L TP

[1] ~~Average daily traffic (ADT) is generally t~~The design year ADT is determined using Chapter 1103 of the WSDOT Design Manual~~and not the current ADT. A possible exception to this rule is where road ADT would likely never reach levels that would exceed its design capacity (such as with rural portions of the state). Contact region hydraulics staff for more information~~.

[2] Treatment is required for these high-use intersections for lanes where vehicles accumulate during the signal cycle, including through, left-turn lanes~~ and right-turn lanes from the beginning of the left-turn pocket~~, and right-turn lanes. If no ~~left~~ turn pocket exists, the treatable area must begin at a distance equal to three car

lengths from the stop line. If runoff from the intersection drains to more than two collection areas that do not combine within the intersection, treatment may be limited to any two of the collection areas where the cars stop. See HRM FAQ for additional information.

[3] ~~—~~For rest areas and maintenance facilities, oil control BMPs are required for the PGIS subject to the oil control threshold activities listed in Table 3-1. All-day parking areas do not require oil control. Oil Control BMPs must be sized to treat all water directed to them~~Contact region hydraulics or environmental staff to determine whether phosphorus control is required for a project~~.

[4] Contact region hydraulics or environmental staff to determine whether phosphorus control is required for a project.

Table 3-2 Basic Treatment receiving water bodies.[1]

1. All saltwater bodies	
2. Rivers (only Basic Treatment requiredapplies belowdownstream of the confluence of the two water bodieslocation)	
Baker (Anderson Creek)	Queets (Clearwater River)Quillayute (Bogachiel River)
Bogachiel (Bear Creek)	Quillayute (Bogachiel River)Quinault (Lake Quinault)
Cascade (Marblemount)	Quinault (Lake Quinault)Sauk (Clear Creek)
Chehalis (Bunker Creek)	Sauk (Clear Creek)Satsop (Middle and East Fork confluence)
Clearwater (Town of Clearwater)	Satsop (Middle and East Fork confluence)Similkameen
Columbia (Canadian Border)	SimilkameenSkagit (Cascade River)
Cowlitz (Skate Creek)	Skagit (Cascade River)Skokomish (Vance Creek)
Elwha (Lake Mills)	Skokomish (Vance Creek)Skykomish (Beckler River)
Green (Howard Hanson Dam)	Skykomish (Beckler River)Snake
Grand Ronde	SnakeSnohomish (Snoqualmie River)
Hoh (South Fork Hoh River)	Snohomish (Snoqualmie River)Snoqualmie (Middle and North Fork confluence)
Humptulips (West and East Fork confluence)	Snoqualmie (Middle and North Fork confluence)Sol Duc (Beaver Creek)
Kalama (Italian Creek)	Sol Duc (Beaver Creek)Spokane
Kettle	SpokaneStillaguamish (North and South Fork confluence)
Klickitat	Stillaguamish (North and South Fork confluence)North Fork Stillaguamish (Boulder River)
Lewis (Swift Reservoir)	North Fork Stillaguamish (Boulder River)South Fork Stillaguamish (Canyon Creek)
Methow	South Fork Stillaguamish (Canyon Creek)Suiattle (Darrington)
Moses	Suiattle (Darrington)Tilton (Bear Canyon Creek)
Muddy (Clear Creek)	Tilton (Bear Canyon Creek)Toutle (North and South Fork confluence)
Naches	Toutle (North and South Fork confluence)North Fork Toutle (Green River)
Nisqually (Alder Lake)	North Fork Toutle (Green River)Washougal (Washougal)
Nooksack (Glacier Creek)	Washougal (Washougal)White (Greenwater River)
South Fork Nooksack (Hutchinson Creek)North River (Raymond)	White (Greenwater River)Wenatchee
South Fork Nooksack (Hutchinson Creek)Okanogan	WenatcheeWind (Carson)
OkanoganPend Oreille	Wind (Carson)Wynoochee (Wishkah River Road Bridge)
Pend OreillePuyallup (Carbon River)	Wynoochee (Wishkah River Road Bridge)Yakima
Puyallup (Carbon River)Queets (Clearwater River)	Yakima
3. Streams with a Strahler order of 4 or higher (as determined using 1:24,000 scale maps to delineate stream order) receiving discharges from roadway outside UGAs with ADT <30,000	
4. Non-fish-bearing streams tributary to Basic Treatment receiving waters	
5. Lakes (county location)	

Banks (Grant)	Silver (Cowlitz)
Chelan (Chelan)	Whatcom (Whatcom)
Moses (Grant)	Washington (King)
Potholes Reservoir (Grant)	Union (King)
Sammamish (King)	
6. Discharges to groundwater via rule-authorized UIC facilities or surface infiltration[2]	

[1] These are r~~R~~eceiving waters not requiring Enhanced Treatment for direct discharges (or, indirectly through a municipal storm sewer system). The initial criteria for this list are rivers whose mean annual flow exceeds 1,000 cubic feet per second and lakes whose surface area exceeds 300 acres. Local governments may petition Ecology for the addition of waters to this list, but waters should have sufficient background dilution capacity to accommodate dissolved metals additions from build-out conditions in the watershed under the latest Comprehensive Land Use Plan and zoning regulations.

[2] Contact region hydraulics or environmental staff to determine whether an underground injection control (UIC) facility is authorized by the rules under the UIC program (WAC 173-218). In western Washington, surface infiltration must meet the site~~oil~~ suitability criteria (SSC~~-7~~) 7 Soil Physical and Chemical Suitability for Treatment when within ¼ mile of surface waters that require the application of Enhanced Treatment. In certain situations, Ecology may approve surface infiltration that would not need enhanced runoff treatment on a case-by-case basis.

Criteria for Sizing Runoff Treatment Facilities

Two sets of criteria exist for sizing runoff treatment facilities—one for western Washington (Table 3-3) and one for eastern Washington (Table 3-4). (See Sections 4-3.1 and 4-4.1 for a detailed discussion of on-line and off-line BMPs.)

Table 3-3 Criteria for sizing runoff treatment facilities in western Washington.

Facility Type	Criteria	Model
Flow-based: upstream of flow control facility (on-line and off-line)	Size treatment facility or facilities so that 91% of the annual average runoff will receive treatment at or below the design loading criteria, under postdeveloped conditions for each TDA. If the flow rate is split upstream of the treatment facility, use the off-line flow rates.	Approved continuous simulation model using 15-minute time steps
Flow-based: downstream of flow control facility	Size treatment facility or facilities using the full 2-year release rate from the detention facility, under postdeveloped conditions for each TDA.	Approved continuous simulation model using 15-minute time steps
Volume-based (on-line)	*Wetpool* – Size the wetpool to store the 91st percentile, 24-hour runoff volume as calculated by MGSFlood. Other volume-based infiltration and filtration facilities – Size the facility to treat 91% of the estimated runoff file for the postdeveloped condition.	Approved continuous simulation model with 15-minute time steps

Table 3-4 Criteria for sizing runoff treatment facilities in eastern Washington.

Facility Type	Criteria	Model
Volume-based	Size facility using the runoff volume predicted for the 6-month, long-duration* storm event under postdeveloped conditions.	Single-event model (SCS or SBUH)

		Climatic Regions 1–4 Regional Storm; OR Type 1A for Climatic Regions 2 & 3 (10-minute time step)
Flow-based: upstream of detention/retention facility	Size facility using the peak flow rate predicted for the 6-month, short-duration storm under postdeveloped conditions.	Single-event model (SCS or SBUH) Short-duration storm (5-minute time step)
Flow-based: downstream of detention facility	Size facility using the full 2-year release rate from the detention facility, under postdeveloped conditions.	Single-event model (SCS or SBUH) Short-duration storm OR the appropriate long-duration storm depending on the Climate Region, whichever produces the greatest flow

* For more information on long-duration and short-duration storms, see Section 4-4.7.

If the BMP receives runoff from areas other than the effective ~~total new~~ PGIS ~~and that portion of any replaced PGIS that~~ requires treatment) cannot be separated and flow to the BMP~~from the total new PGIS runoff~~, treatment facilities must be sized to treat this additional runoff.

~~3-5.5~~3-3.6 Minimum Requirement 6 – Flow Control

~~This requirement applies to all nonexempt projects that discharge stormwater directly or indirectly through a conveyance system to a surface freshwater body.~~ Stormwater flow control facilities shall be selected, designed, and maintained in accordance with the HRM.

~~3-5.5.2~~3-3.6.1 Objective

The objective of flow control is to prevent increases in the stream channel erosion rates beyond those characteristic of natural or reestablished conditions. The ~~intent~~ objective is also to prevent cumulative future impacts from increased stormwater runoff volumes and flow rates on streams. Wherever possible, dispersion and infiltration are~~is~~ the preferred methods of flow control. Meeting flow control requirements may also be achieved through regional detention ~~stormwater~~ facilities.

~~3-5.5.3~~3-3.6.2 Flow Control Exemptions

~~Flow control is not required for all discharges to surface waters, because it is not always needed to protect stream morphology.~~ Regardless of whether an exemption applies, ~~projects~~ TDAs need to take advantage of on-site opportunities to disperse and infiltrate storm runoff to the greatest extent feasible.

The following TDA ~~projects and~~ discharges are exempt from flow control requirements~~; however, runoff treatment may still be required per Minimum Requirement 5~~:

1. A TDA~~project~~ is able to disperse stormwater without discharging runoff either directly or indirectly through a conveyance system to surface waters per the Dispersion BMP guidelines in Section 5-2.2.2.
2. TDAs~~Projects~~ discharging stormwater directly or indirectly through a conveyance system into any of the flow control exempt surface water bodies shown in Table 3-5.
3. TDAs~~Projects~~ discharging stormwater from over-the-water structures such as bridges, docks, and piers in or over fresh water are exempt up to the 2-year flood plain elevation; OR that portion of an over-the-water structure that is over the ordinary high water mark.
4. Portions of a roadway that cut through the 2-year flood plain elevation.
5. TDAs~~Projects~~ discharging stormwater directly or indirectly through a conveyance system into a wetland. However, flow control may still be required to maintain wetland hydrology (depth/duration of inundation) per Minimum Requirement 7. ~~(See other applicable wetland protection criteria under Minimum Requirement 4.)~~

Any of the exempted areas must meet the following requirements:

- Direct discharge to the exempt receiving water does not result in the diversion of drainage area from perennial streams classified as Types 1, 2, 3, or 4 in the State of

Washington Interim Water Typing System; or Types "S," "F," or "Np" in the Permanent Water Typing System; or from any Category I, II, or III wetland; AND

- Flow-splitting devices or drainage BMPs are applied to route natural runoff volumes from the TDA~~project site~~ to any downstream Type 5 stream or Category IV wetland:
  - Design of flow-splitting devices or drainage BMPs will be based on continuous hydrologic modeling analysis (western Washington only). The design will ensure flows delivered to Type 5 stream reaches will approximate, but in no case exceed, durations ranging from 50% of the 2-year to the 50-year peak flow.
  - Flow-splitting devices or drainage BMPs that deliver flow to category IV wetlands will also be designed using continuous hydrologic modeling to preserve preproject wetland hydrologic conditions unless specifically waived or exempted by regulatory agencies with permitting jurisdiction; AND
- The TDA~~project site~~ must be drained by a conveyance system that is comprised entirely of constructed conveyance elements (such as pipes, ditches, or drainage channels) ~~and~~ that extends to the ordinary high water mark of the exempt receiving water, unless, in order to avoid construction activities in sensitive areas, flows are properly dispersed before reaching the buffer zone of the sensitive or critical area; AND
- The conveyance system between the TDA~~project site~~ and the exempt receiving water must have a hydraulic capacity sufficient to convey discharges under future build-out conditions (under current zoning) from all contributing ~~project and nonproject areas~~areas to the TDA, if applicable (see the *Utilities Manual*, Section 120.05~~-18~~, for storm drainage requirements), from which runoff is collected; AND
- Any erodible elements of the constructed conveyance system ~~for the area~~ must be adequately stabilized to prevent erosion under the conditions listed above~~future build-out conditions from areas that contribute flow to the system~~; AND
- ~~If the discharge is to a stream that leads to a wetland, or to a wetland that has an outflow to a stream, both this requirement and Minimum Requirement 7 apply.~~

The following **additional** exemptions (or partial exemptions) are available in eastern Washington:

1. A site with less than 10-inch average annual rainfall that discharges to a seasonal stream that is not connected via surface flow to a nonexempt surface water by runoff generated during the 2-year regional storm for Climatic Regions 1–4 OR during the 2-year Type 1A storm for Climatic Regions 2 and 3.
2. Discharges to a stream that flows only during runoff-producing events. The runoff carried by the stream following the 2-year regional storm in Climatic Regions 1–4 OR during the 2-year Type 1A storm for Climatic Regions 2 and 3, must not discharge via surface flow to a nonexempt surface water. The stream may carry runoff during an

average annual snowmelt event, but must not have a period of base flow during a year of normal precipitation.

3. Discharges to stream reaches consisting primarily of irrigation return flows and not providing habitat for fish spawning and rearing. ~~Projects must match the predeveloped 2-year and 25-year peak runoff rates for these discharges. Local irrigation districts may impose other requirements.~~

~~Submit petitions t~~To seek exemptions in additional geographic areas, the PEO should submit a DAT proposal ~~petition to Ecology~~ for consideration. Such a petition must justify the proposed exemption based on a hydrologic analysis demonstrating that the potential stormwater runoff from the exempted area will not significantly increase the erosion forces on the stream channel, nor have near-field impacts. Contact the Region Hydraulics Engineer~~Office~~ to determine the feasibility of potential exemption candidates.

The DAT proposal may ~~C~~consider diversions of flow from perennial streams and from wetlands if significant existing (preproject) flooding, stream stability, water quality, or aquatic habitat problems would be solved or significantly mitigated by bypassing stormwater runoff, rather than providing stormwater detention and discharge to natural drainage features. Bypassing is not an alternative to applicable flow control or treatment if the flooding, stream stability, water quality, or habitat problem to be solved would be caused by the project. In addition, ensure the DAT proposal does not exacerbate other water quality/quantity problems such as inadequate low flows or inadequate wetland water elevations.

The PEO~~A stormwater engineer or scientist~~ must document the existing problems and their solutions or mitigation as a result of the direct discharge after review of any available drainage reports, B~~b~~asin P~~p~~lans (see Minimum Requirement #8), or other relevant literature. The restrictions in this minimum requirement on conveyance systems that transfer water to exempt receiving waters are applicable in these situations. All regulatory authorities with permitting jurisdiction must be in support of ~~Approvals~~ the DAT proposal for the flow control exemption and/or movement of flows between areas on the project~~by all regulatory authorities with permitting jurisdiction are necessary~~.

Additional streams in eastern Washington may be exempt by applying the following criteria:

- Any river or stream that is Strahler fifth order or greater as determined from a 1:24,000 scale map; OR
- Any river or stream that is Strahler fourth order or greater as determined from a 1:100,000 or larger scale map.

~~3-5.5.4~~3-3.6.3 Applicability[4]

Minimum Requirement 6 applies to all nonexempt projects that meet or exceed the thresholds described in Figures 3-1, 3-2, and 3-3 and discharge stormwater directly or indirectly through a conveyance system to a surface freshwater body. The threshold for triggering the flow control requirement takes into account the project's effective impervious surfaces and converted pervious surfaces.

Application of the "net-new impervious surface" concept only applies to Minimum Requirement 6 at the TDA level (Figure 3-3, Step 8). Application of the concept does not extend to any other minimum requirement. When applying the net-new impervious approach, the pavement permanently removed by the project needs to be reverted to a pervious condition per the guidelines in Section 4-3.5~~.1~~.3.

[4] Consult the Glossary for the following key terms: *converted pervious surface*, *new impervious surfaces*, *effective impervious surface*, *net-new impervious surface*, *project limits*, *replaced impervious surface*, and *threshold discharge area (TDA)*.

Table 3-5 Flow control exempt surface waters list.

Water Body	Upstream Point/Reach for Exemption (if applicable)
Alder Lake	
Asotin Creek	Downstream of confluence with George Creek
Baker Lake	
Baker River	Baker River/Baker Lake downstream of confluence with Noisy Creek
Banks Lake	
Bogachiel River	0.4 miles downstream of Dowans Creek
Bumping Lake	
Bumping River	Downstream of confluence with American River
Calawah River	Downstream of confluence with South Fork Calawah River
Capital Lake/Deschutes River	Downstream of Tumwater Falls
Carbon River	Downstream of confluence with South Prairie Creek
Cascade River	Downstream of Found Creek
Cedar River	Downstream of confluence with Taylor Creek
Chehalis River	1,500 feet downstream of confluence with Stowe Creek
Chehalis River, South Fork	1,000 feet upstream of confluence with Lake Creek
Cispus River	Downstream of confluence with Cat Creek
Clearwater River	Downstream of confluence with Christmas Creek
Cle Elum River	Downstream of Cle Elum Lake
Coal Creek Slough	Boundary of Consolidated Diking and Irrigation District #1 to confluence with the Columbia River
Columbia River	Downstream of Canadian border
Columbia River Reservoirs	
Colville River	Downstream of confluence with Chewelah Creek
Conconully Reservoir	
Consolidated Diking and Irrigations District #1	Waters that lie within the area bounded by the Columbia River on the south, the Cowlitz River on the east, Ditch No. 10 to the west, and Ditch No. 6 to the north.
Consolidated Diking and Irrigation District #3	Ditches served by these pump stations: Tam O'Shanter #1 and #2, Coweeman, Baker Way, Elk's
Coweman River	Downstream of confluence with Gobble Creek
Cowlitz River	Downstream of confluence of Ohanapecosh River and Clear Fork Cowlitz River
Crescent Lake	
Dickey River	Downstream of confluence with Coal Creek
Dosewallips River	Downstream of confluence with Rocky Brook
Dungeness River, main channels	Downstream of confluence with Gray Wolf River
Duwamish/Green River	Downstream of River Mile 6 (S. Boeing Access Road)
Elwha River	Downstream of confluence with Goldie River
Erdahl Ditch in Fife	Downstream of pump station
First Creek in Tacoma	
Grande Ronde River	Entire reach from the Oregon to Idaho border
Grays River	Downstream of confluence with Hull Creek
Green River (WRIA 26 – Cowlitz)	3.5 miles upstream of Devils Creek
Hoh River	1.2 miles downstream of Jackson Creek
Humptulips River	Downstream of confluence with West and East Forks
Johns Creek	Downstream of Interstate-405 East Right of way
Kalama River	2.0 miles downstream of Jacks Creek

Water Body	**Upstream Point/Reach for Exemption** (if applicable)
Kettle River	Downstream of confluence with Boulder Creek
Klickitat River	Downstream of confluence with West Fork
Lacamas Lake	
Latah Creek (formerly Hangman Creek)	Downstream of confluence with Rock Creek (in Spokane County)
Lake Chelan	
Lake Cle Elum	
Lake Cushman	
Lake Kachess	
Lake Keechelus	
Lake Quinault	
Lake River (Clark County)	
Lake Shannon	
Lake Sammamish	
Lake Union & Union Bay	King County
Lake Wenatchee	
Lake Washington, Montlake Cut, Ship Canal, & Salmon Bay	
Lake Whatcom	
Lewis River	Downstream of confluence with Quartz Creek
Lewis River, East Fork	Downstream of confluence with Big Tree Creek
Lightning Creek	Downstream of confluence with Three Fools Creek
Little Spokane River	Downstream of confluence with Deadman Creek
Little White Salmon River	Downstream of confluence with Lava Creek
Lower Crab Creek	Entire reach
Mayfield Lake	
Mercer Slough	
Methow River	Downstream of confluence with Early Winters Creek
Moses Lake	
Muddy River	Downstream of confluence with Clear Creek
Naches River	Downstream of confluence with Bumping River
Naselle River	Downstream of confluence with Johnson Creek
Newaukum River	Downstream of confluence with South Fork Newaukum River
Nisqually River	Downstream of confluence with Big Creek
Nooksack River	Downstream of confluence of North and Middle Forks
Nooksack River, North Fork	Downstream of confluence with Glacier Creek, at USGS gage 12205000
Nooksack River, South Fork	0.1 miles upstream of confluence with Skookum Creek
North River	Downstream of confluence with Vesta Creek
Ohanapecosh River	Downstream of confluence with Summit Creek
Okanogan River	Downstream of Canadian border
Osoyoos Lake	
Pacific Ocean	
Palouse River	Downstream of confluence with South Fork Palouse River
Pend Oreille River	Idaho to Canadian border
Pend Oreille River Reservoirs	
Pothole Reservoir	
Puget Sound	
Puyallup River	Half-mile downstream of confluence with Kellog Creek

Water Body	**Upstream Point/Reach for Exemption** (if applicable)
Queets River	Downstream of confluence with Tshletshy Creek
Quillayute River	Downstream of Bogachiel River
Quinault River	Downstream of confluence with North Fork Quinault River
Riffe Lake	
Rimrock Lake	
Rock Creek	In Whitman County, downstream of confluence with Cottonwood Creek
Round Lake	
Ruby Creek	Ruby Creek at State Route 20 crossing downstream of Granite and Canyon Creeks
Sammamish River	Downstream of Lake Sammamish
~~Sauk River~~	~~Downstream of confluence of North and South Forks~~
Satsop River	Downstream of confluence of Middle and East Forks
Satsop River, East Fork	Downstream of confluence with Decker Creek
Sauk River	Downstream of confluence of South Fork and North Fork
Sauk River, North Fork	North Fork Sauk River at Bedal Campground
Silver Lake	Cowlitz County
Similkameen River	Downstream of Canadian border
Skagit River	Downstream of Canadian border
Skokomish River	Downstream of confluence of North and South Forks
Skokomish River, South Fork	Downstream of confluence with Vance Creek
Skokomish River, North Fork	Downstream of confluence with McTaggert Creek
Skookumchuck River	1 mile upstream of Bucoda at State Route 507, milepost 11.0
Skykomish River	Downstream of South Fork
Skykomish River, South Fork	Downstream of confluence of Tye and Foss Rivers
Snake River	Entire reach along Idaho border to the Columbia River
Snake River Reservoirs	
Snohomish River	Downstream of confluence of Snoqualmie and Skykomish Rivers
Snohomish River Estuary	
Snoqualmie River	Downstream of confluence of the Middle Fork
Snoqualmie River, Middle Fork	Downstream of confluence with Rainy Creek
Sol Duc River	Downstream of confluence of North and South Fork Soleduck River
Spokane River	Downstream of Idaho border
Spokane River Reservoirs	
Stillaguamish River	Downstream of confluence of North and South Forks
Stillaguamish River, North Fork	7.7 highway miles west of Darrington on State Route 530, downstream of confluence with French Creek
Stillaguamish River, South Fork	Downstream of confluence of Cranberry Creek and South Fork
Suiattle River	Downstream of confluence with Milk Creek
Sultan River	0.4 miles upstream of State Route 2
Swift Creek Reservoir	
Teanaway River	Downstream of confluence of North and West Forks
Thunder Creek	Downstream of confluence with Neve Creek
Tieton River	Downstream of Rimrock Lake
Tilton River	Downstream of confluence with North Fork Tilton River
Toppenish Creek	Downstream of confluence with Wanity Slough
Touchet River	Downstream of confluence with Patit Creek
Toutle River	North and South Fork confluence

Water Body	Upstream Point/Reach for Exemption (if applicable)
Toutle River, North Fork	Downstream of confluence with Hoffstadt Creek
Toutle River, South Fork	Downstream of confluence with Thirteen Creek
Tucannon River	Downstream of confluence with Pataha Creek
Union Bay	
Vancouver Lake	
Walla Walla River	Downstream of confluence with Mill Creek
Wenatchee River	Downstream of confluence with Icicle Creek
White River	Downstream of confluence with Huckleberry Creek
White Salmon River	0.15 miles upstream of confluence with Trout Lake Creek
Willapa River	Downstream of confluence with Mill Creek
Wind River	Downstream of confluence with Cold Creek
Wynochee Lake	
Wynoochee River	Downstream of confluence with Schafer Creek
Yakima River	Downstream of Lake Easton

Natural dispersion areas meeting the requirements of BMP FC.01 must be identified within the project limits as a part of determining whether the particular TDA exceeds thresholds in Figure 3-3, Step 8. Those effective impervious surface areas that are flowing to an existing (preproject) dispersion area can be subtracted as noneffective impervious surfaces.

The analysis for Step 8 in Figure 3-3 is based on "existing land cover" (what is currently seen at the project site) conditions for the predeveloped modeling scenario and the post construction (after the project is completed) land cover conditions for the developed modeling conditions. Run the analysis at 15-minute time steps to see if the difference is more than 0.15 cfs. Model ~~pe~~permeable~~rvious~~ pavement as grass in this analysis. When using the Single Scaling Factor Approach (called "Station Data" option in MGSFlood) to perform this analysis, contact the HQ Hydraulics Section~~Office~~, since the data station may not be able to produce the 100-year flow due to insufficient rainfall data. Refer to Section 4 of the MGSFlood *User's Manual* for additional information on the Single Scaling Factor Approach:
www.wsdot.wa.gov/design/hydraulics/training.htm

~~3-5.5.5~~3-3.6.4 Guidelines

Infiltration or dispersion is the preferred method to control flow. If ~~the PEOyou cannot achieve~~ infiltration or dispersion cannot be achieved at the project site, refer to the appropriate design criteria listed below and in Chapter 4.

Do not place flow control BMPs or the live storage portion of a combination flow control/runoff treatment BMP below the seasonal high water table. As an alternative, first look for equivalent areas within the same ~~threshold discharge area (~~TDA~~)~~ to provide the necessary flow control. If ~~the PEOyou cannot find~~ a feasible location cannot be identified within the TDA, seek out equivalent areas—within WSDOT right of way—upstream of the TDA that discharges to the same receiving water body to provide the necessary flow control. Lastly, if ~~the PEOyou cannot find~~ a feasible location upstream of the TDA cannot be identified, seek out equivalent areas—

within WSDOT right of way—downstream of the TDA that discharges to the same receiving water body to provide the necessary flow control. Document these constraints using the Engineering and Economic Feasibility (EEF) Evaluation Process (see Appendix 2A).

If none of the above options is feasible within the project site, then explore alternative flow control mitigation in the watershed (for example, purchasing land and converting it back to a forested condition or restoring wetlands in close proximity to the project site). Refer to Section 2-4.7 for more information on watershed-based approaches and Section 3-5 for stormwater deviations to the HRM.

Avoid placing BMPs in wetlands, 100-year floodplains, and intertidal areas. These natural systems have a higher net environmental benefit than engineered stormwater management systems. If the placement of a required flow control BMP would impact such a sensitive area, consult the Region Hydraulics Engineer~~Office~~ as early as possible for aid in properly analyzing the effects of various flow control options. The Region Hydraulics Engineer and Environmental offices will also coordinate with the appropriate state, local, tribal, and federal agencies to ensure adequate protection of all natural resources and obtain the required permits.

Design specifications for conveyance and flood prevention are reviewed with the assistance of the Region Hydraulics Engineer or HQ Hydraulics Section~~Office~~.

Western Washington Design Criteria

Ensure stormwater discharges match developed discharge durations to predeveloped durations for the range of predeveloped discharge rates from 50% of the 2-year peak flow up to the full 50-year peak flow. Also, check the 100-year peak flow rate for downstream flooding and property damage using an approved continuous simulation model.

Refer to Section 4-3.5.4~~1~~ for the appropriate modeling process. Also, reference the same section for the modeling process to address mitigated and nonmitigated areas on projects in on-site and off-site flow bypass situations.

Predeveloped Condition for Stormwater Hydrology Modeling

The project site's predeveloped conditions for effective impervious surfaces are to assume "historic" land cover conditions unless one of the following conditions applies:

- Reasonable, historic information is provided that indicates the site was prairie prior to settlement (modeled as "pasture" in MGSFlood).
- ~~—~~The drainage area of the immediate stream and all subsequent downstream basins has had at least 40% total impervious area since 1985. In this case, the predeveloped condition to be matched must be the existing land cover condition. Where basin-specific studies determine a stream channel to be unstable, even though the above criterion is met, the predeveloped condition assumption must be the "historic" land cover condition or a land cover condition commensurate with achieving a target flow

regime identified by an Ecology-approved basin study. More information on qualifying basins is available in I-3.4.7 Volume I of Ecology's SWMMWW.~~at:~~
~~- www.ecy.wa.gov/programs/wq/stormwater/flowcontrol.html~~

- ~~For WSDOT projects, assume an existing land cover condition if following the Stormwater Retrofit Analysis procedure outlined in Section 3-4 and Figures 3-4 and 3-5. This process was created through an agreement between WSDOT and DOE for WSDOT projects.~~

Table 3-6 summarizes flow control criteria for western Washington. ~~The duration standard does not apply to infiltration facilities that will reliably infiltrate all the runoff from impervious surfaces and converted pervious surfaces.~~

Table 3-6 Western Washington flow control criteria.

Facility Type	Criteria	Model
Infiltration facilities	Size facility to infiltrate sufficient volumes so that the overflow matches the duration standard, and check the 100-year peak flow to estimate the potential for downstream property damage, or infiltrate the entire runoff file up to the 100-year event.	Continuous simulation model using 15-minute time steps
Detention/combination treatment and detention facilities	Provide storage volume required to match the duration of predeveloped peak flows from 50% of the 2-year up to the 50-year storm flow, using a flow restrictor (such as an orifice or weir), and check the 100-year peak flow for property damage.	Continuous simulation model using 15-minute time steps

Establish an alternative flow control standard by applying watershed-scale hydrologic modeling and supporting field observations. Possible justifications for an alternative flow control standard include:

1. Establishment of a stream-specific threshold of significant bedload movement other than the assumed 50% of the 2-year peak flow; OR
2. Zoning and Land Clearing Ordinance restrictions that, in combination with an alternative flow control standard, maintain or reduce the naturally occurring erosive forces on the stream channel, with local jurisdiction approval; OR
3. A duration control standard is not necessary for protection, maintenance, or restoration of designated and existing beneficial uses or Clean Water Act compliance.

Eastern Washington Design Criteria

Using a single-event model, flow control design requirements for projects must limit the peak release rate of the postdeveloped 2-year peak flow ~~runoff volume~~ to 50% of the predeveloped 2-year peak flow and maintain the predeveloped 25-year peak runoff rate. Check the 100-year event for downstream flooding and property damage.

Predeveloped Condition for Stormwater Hydrology Modeling

The project site's predeveloped conditions for effective impervious surfaces are to assume an existing land cover. Table 3-7 summarizes flow control criteria for eastern Washington. ~~The peak flow matching standard does not apply to infiltration facilities that will reliably infiltrate all the runoff from impervious surfaces and converted pervious surfaces.~~

Table 3-7 Eastern Washington flow control criteria.

Facility Type	Criteria	Model
Infiltration facilities	Size facility to infiltrate sufficient runoff volumes that the overflow does not exceed the 25-year peak flow requirement. Check the 100-year peak flow to estimate the potential for downstream property damage, or infiltrate the entire runoff file up to the 100-year event.	Single-event model (SCS or SBUH) Climatic Regions 1–4 Regional Storm; OR Type 1A Storm for Climatic Regions 2 & 3 only
Detention/combination treatment and detention facilities	Provide storage volume required to match ½ of the 2-year predeveloped peak flow rate, match the predeveloped 25-year peak flow rate, and check the 100-year peak flow for property damage.	Single-event model (SCS or SBUH) Climatic Regions 1–4 Regional Storm; OR Type 1A Storm for Climatic Regions 2 & 3 only

Estimate predevelopment and postdevelopment runoff volumes and flow rates in accordance with Table 3-7 and Section 4-4.2 using the Regional Storm for Climatic Regions 1–4, OR Type 1A Storm for Climatic Regions 2 and 3.

In some instances, the 2-year predeveloped flow rate is zero cubic feet per second or the flow rate is so small that it is impracticable to design a pond to release at the prescribed flow rate from an engineered outlet structure. In these cases, the total postdeveloped 2-year storm runoff volume must be infiltrated (preferred) or stored in a retention pond for evaporation and the detention pond designed to release the predeveloped 10- and 25-year flow rates. (See BMP FC.03, Detention Pond, in Section 5-4.2.3 for pond and release structure design information.)

Infiltration facilities for flow control must be designed based on postdeveloped runoff volumes, and must be designed to infiltrate the entire volume of the criteria noted in Table 3-7. If full infiltration is not possible, ensure all surface discharges match the following criteria:

- If the 2-year postdeveloped outflow volume discharged to a surface water is less than or equal to the 2-year predeveloped outflow volume, then the postdeveloped 2-year flow rate must be less than or equal to the 2-year predeveloped flow rates. The flows for the 25- and 100-year events must meet the criteria in Table 3-7, row 2.
- If the 2-year postdeveloped outflow volume is greater than the 2-year predeveloped outflow volume, then all surface water discharges must match the flow rate standards in Table 3-7, row 2.

The justification from Ecology for matching one-half the preexisting flow rate is the added work done on the natural channel by the excess volume released in a typical “detention/retention” pond system. If infiltration disposes of the extra volume produced by the added impervious areas, then releasing flow at the preexisting 2-year rate mimics the existing hydrologic conditions.

~~3-5.6~~3-3.7 Minimum Requirement 7 – Wetlands Protection

Stormwater discharges to wetlands must maintain the wetland's hydrologic conditions (particularly hydroperiod), hydrophytic vegetation, and substrate characteristics that are necessary to maintain existing wetland functions and values.

~~3-5.6.1~~3-3.7.1 Objective

The objective of wetlands protection is to ensure wetlands receive the same level of protection as any other waters of the state.

~~3-5.6.2~~3-3.7.2 Applicability

Minimum Requirement 7 applies to all nonexempt projects that meet or exceed the thresholds described in Figure 3-1 and where stormwater discharges into a wetland, either directly or indirectly, through a conveyance system.

All stormwater discharges to wetlands must comply with the~~is manual's~~ runoff treatment and flow control requirements in this manual.

~~3-5.6.3~~3-3.7.3 Guidelines

Take steps during design to maximize natural water storage and infiltration opportunities within the project site and outside existing wetlands. Do not use natural wetlands as pollution control facilities in lieu of runoff treatment BMPs.

~~Building s~~Stormwater runoff treatment and flow control facilities shall not be built within a wetland or its natural vegetated buffer~~ is discouraged~~, except for:

- Necessary conveyance systems as allowed by applicable permit(s); OR
- As allowed in wetlands approved for hydrologic modification or treatment in accordance with Ecology guidance. For western Washington projects, refer to ~~*Guide Sheet 3B* in~~ Volume I Appendix I-C~~D~~ of Ecology's SWMMWW. For eastern Washington projects, refer to Core Element #5 Runoff Treatment and Core Element #5 Flow Control~~to *Use of Existing Wetlands to Provide Runoff Treatment* (in Section 2.2.5) and *Application to Wetlands and Lakes* (in Section 2.2.6)~~ in Ecology's SWMMEW; ~~, and the *Eastern Washington Wetland Rating Form:* www.wsdot.wa.gov/nr/rdonlyres/41520679-f96d-47a9-9b70-3ec8bbec391f/0/wetlandratingform_easternwa.doc);~~ OR
- Projects with approved permits from the appropriate resource agencies.

The PEO ~~You~~ may use an Ecology-approved ~~dopted and implemented B~~basin P~~p~~lan (see Minimum Requirement 8)~~,~~ or a Total Maximum Daily Load (TMDL) ~~Water Cleanup Plan~~ to develop requirements for wetlands that are tailored to a specific basin.

Apply the thresholds identified in Minimum Requirement 5 (Runoff Treatment) and Minimum Requirement 6 (Flow Control) for discharges to wetlands. In addition, perform a hydroperiod analysis and show that the discharge will not adversely affect the wetland hydroperiod.

When considering constructing new wetlands or using existing wetlands for flow control or runoff treatment, or when looking for guidelines on protecting wetlands from stormwater impacts, seek input from the appropriate in-house experts in the environmental, biological, wetlands, and landscape architectural disciplines. For projects in the Puget Sound basin, refer to ~~*Guide Sheet 2B* in~~ Appendix I-~~CD~~ of Ecology's SWMMWW. Refer to Section 2-4.1.1 regarding special wetland design considerations, Section 4-6 for additional information on wetland hydroperiod analysis, and Section 5-4.1.4 for additional information on the Constructed Stormwater Treatment Wetland (see BMP RT.13).

3-3.8 Minimum Requirement 8 – Incorporating Approved ~~Watershed/~~Basin Plan~~sning~~ Into Stormwater Management

Incorporate Ecology-approved basin plans into stormwater management.

~~3-5.6~~

3-3.8.1 Objective

Approved ~~Watershed/~~b~~B~~asin ~~P~~plans may be used by a local jurisdiction to revise ~~M~~minimum ~~R~~requirements ~~standards~~ for ~~R~~runoff ~~T~~treatment, ~~F~~flow ~~C~~control, and/or ~~W~~wetlands ~~P~~protection~~subject projects to different minimum requirements for erosion control; source control; runoff treatment; and operation and maintenance; and to alternative requirements for flow control and wetlands hydrologic control~~. ~~Watershed/b~~ Approved ~~B~~basin ~~P~~plans provide a mechanism to evaluate and refine ~~M~~minimum ~~R~~requirements and applicable BMPs based on an analysis of a basin or watershed. Approved ~~B~~basin ~~P~~plans may be used to develop control strategies to address impacts from future development and to correct specific problems when sources are known or suspected. ~~asin plans must evaluate and include, as necessary, retrofitting urban stormwater BMPs into existing development or redevelopment in order to achieve watershed-wide pollutant reduction and flow control goals consistent with the requirements of the federal Clean Water Act. Standards developed from basin plans cannot modify any of the above minimum requirements until the basin plan is formally adopted and implemented by the local governments within the basin and has received approval or concurrence from Ecology.~~

~~3-5.6.4 Objective~~

Approved ~~B~~basin ~~P~~plans can be effective at addressing both long-term cumulative impacts of pollutant loads and short-term acute impacts of pollutant concentrations, as well as hydrologic impacts to streams, wetlands, and ground water resources. The objective of incorporating approved ~~watershed-based/~~b~~B~~asin p~~P~~lan~~sning~~ into WSDOT's stormwater management process is to promote ~~the development of~~ watershed-based stormwater management~~resource plans as~~

~~a means to develop and implement comprehensive water resource protection measures~~. ~~The primary objective of basin planning is to reduce pollutant loads and hydrologic impacts to surface waters and groundwaters in order to protect water resources.~~

~~3-5.6.5~~3-3.8.2 Applicability

Minimum Requirement 8 applies where approved ~~watershed and~~ b~~B~~asin p~~P~~lans, meeting the criteria described below, are in effect for all nonexempt projects that meet or exceed the thresholds described in Figure 3-1. Only those Ecology-~~-~~approved ~~B~~basin ~~P~~plans listed ~~XXXX~~in Ecology's SWMMWW Appendix 1-B are applicable to WSDOT. New Ecology-~~-~~approved ~~B~~basin p~~P~~lans may be added upon NPDES Municipal Stormwater Permit reissuance in 2024.

~~3-5.6.6~~3-3.8.3 Guidelines

While Minimum Requirements 1 through 7 establish general standards for individual sites, they do not evaluate the overall pollution impacts and protection opportunities that could exist at a watershed scale. In order for an approved ~~B~~basin ~~P~~plan to revise the standards of one or more of the ~~M~~minimum ~~R~~requirements, the following conditions must be met:

- ~~•~~ The ~~B~~basin ~~P~~plan must be formally adopted by all jurisdictions with responsibility under the plan; and
- ~~•~~ All ordinances or regulations called for by the approved ~~B~~basin ~~P~~plan must be in effect; and
- ~~•~~ The ~~B~~basin ~~P~~plan must be reviewed and approved by Ecology.

Ecology-~~A~~approved ~~B~~basin ~~P~~plans may also be used to demonstrate an equivalent level of ~~R~~runoff ~~T~~treatment, ~~F~~flow ~~C~~control, and/or ~~W~~wetland ~~P~~protection through the construction and use of regional stormwater facilities.~~For a basin plan to serve as a means of modifying the minimum requirements, the following conditions must be met:~~

~~■ The plan must be formally adopted by all jurisdictions, comply with state and federal statutes, and be approved by the regulatory agencies responsible for implementing those statues; AND~~

~~■ All ordinances or regulations called for by the plan must be in effect.~~

~~Basin planning provides a mechanism by which the minimum requirements and implementing BMPs can be evaluated and refined based on an analysis of an entire watershed. Basin plans are especially well suited for developing control strategies to address impacts from future development and to correct specific problems whose sources are known or suspected. Basin plans can be effective in addressing both long-term and cumulative impacts of pollutant loads; short-term acute impacts of pollutant concentrations; and hydrologic impacts to streams, wetlands, and groundwater resources.~~ (See Section 2-4.7 for further guidelines on approved ~~b~~Basin~~/ watershed p~~Plan~~sning~~.) Refer to ~~Appendix I-A of~~ Ecology's SWMMWW for examples of how approved ~~b~~Basin ~~p~~Plan~~sning~~ can alter the ~~m~~Minimum ~~r~~Requirements of this manual.

~~3-5.7~~3-3.9 Minimum Requirement 9 – Operation and Maintenance

~~An o~~Operation and maintenance ~~manual that is consistent with the criteria in Section 5-5 will be provided for~~must be applied to all projects that require stormwater ~~control~~ facilities or BMPs and ~~proposed stormwater facilities and BMPs. The party (or parties) responsible for such maintenance and operation must be identified and a record of maintenance activities kept.~~ shall be accomplished programmatically via WSDOT's maintenance program. WSDOT must provide an operation and maintenance manual that is consistent with the criteria in Section 5-5 for all proposed stormwater facilities and BMPs. A record of maintenance activities that indicate what actions were taken shall be kept.

~~3-5.7.1~~3-3.9.1 Objective

The objective of operation and maintenance is to achieve appropriate preventive maintenance and performance checks to ensure stormwater ~~control~~ facilities are adequately maintained and properly operated to:

- Remove pollutants and/or control flows as designed.
- Permit the maximum use of the roadway.
- Prevent damage to the highway structure.
- Protect natural resources.
- Protect abutting property from physical damage.

~~3-5.7.2~~3-3.9.2 Applicability

Minimum Requirement 9 applies to all projects that require stormwater ~~control~~ facilities or BMPs and is accomplished programmatically via WSDOT's maintenance program.

~~3-5.7.3~~3-3.9.3 Guidelines

Inadequate maintenance is a common cause of stormwater management facility degraded performance or failure. Section 5-5 provides criteria for BMP maintenance. The *Maintenance Manual* provides further guidelines on stormwater management-related operation and maintenance activities.

~~3-6~~3-4 Stormwater Retrofit Guidelines

WSDOT ~~ultimately aims~~intends to ~~provide practicable stormwater~~ manage~~ment for~~ stormwater runoff from all state highways~~existing impervious surfaces,~~ and protect the quality ~~beneficial uses~~ of receiving waters. WSDOT retrofits ~~E~~existing pavement~~highway sections with no~~ that does not have stormwater treatment or flow control, or for which treatment or flow control is not to current standards contained in the HRM ~~substandard treatment or flow control, may eventually be retrofitted in accordance with WSDOT's stormwater retrofit program. If it is cost-effective to include a BMP to address the entire project site, even though only a portion of the facility is undergoing expansion or redevelopment, design and construct the BMP to address the larger area~~using stand-alone, project-triggered, and opportunity-based stormwater retrofits.

This section provides guidelines to assess stormwater retrofit obligations for WSDOT projects and identify stormwater retrofit opportunities, and provides guidance on how to document stormwater retrofits after they occur.

3-4.1 Stand-Alone Stormwater Retrofit Projects ~~3-4.1 Stormwater Retrofit Needs, Prioritization, and Stand-alone Stormwater Retrofits~~

Standalone stormwater retrofits, funded through the Environmental Retrofit sub-program (I-4), occur when projects are initiated to address stormwater treatment and/or flow control at a prioritized location defined by the stormwater needs prioritization process. Stand-alone stormwater retrofits include Total Maximum Daily Load (TMDL) retrofit obligations assigned in Appendix 3 of WSDOT's NPDES Municipal Permit (WSDOT's Permit), and potentially Superfund remediation triggered retrofits[5], as the highest priorities (i.e., these two situations result in the highest scores during the prioritization process). WSDOT's Permit describes stormwater retrofit-related requirements. WSDOT's associated Stormwater Management Program Plan (SWMPP) describes how WSDOT implements those stormwater retrofit requirements. Section 6.6 and Table 6-1 in the SWMPP defines WSDOT's Stormwater Retrofit Prioritization Scheme (i.e. needs prioritization process) for stand-alone stormwater retrofit segments. It involves a qualitative and quantitative process for assigning a retrofit priority value (high, medium, or low) to specific highway segment locations. Prioritized highway segments are used in the stand-alone and Puget Sound Basin project-triggered stormwater retrofit processes~~, described in the following sections~~.

Statewide stand-alone stormwater retrofit funding is appropriated in I-4 by the Legislature. Puget Sound basin specific stand-alone stormwater retrofits also receive funds that are transferred from projects within the Puget Sound basin (Project-Triggered retrofit) as described in Section 3-4.2.2 below.~~WSDOT's NPDES Municipal Stormwater Permit describes stormwater~~

[5] A Superfund site is a contaminated location included on the National Priorities List by the EPA that has been or will be remediated (cleaned up) – more information at: Superfund Cleanup Process | Superfund | US EPA.

~~retrofit-related requirements. WSDOT's associated Stormwater Management Program Plan (SWMPP) describes how WSDOT implements those requirements. Table 6-1 (Appendix 2) defines WSDOT's Stormwater Retrofit Prioritization Scheme (i.e. needs prioritization process), which involves a qualitative and quantitative process for assigning a retrofit priority value to specific highway segment locations. Prioritized highway segments are used in the stand-alone and Puget Sound Basin project-triggered stormwater retrofit processes, described in the following sections.~~

~~Section 3-4.1 contains the guidelines for WSDOT projects within the Puget Sound basin. Sections 3-4.2 to 3-4.5 contain guidelines for WSDOT projects outside of the Puget Sound basin. These sections provide guidelines to assess:~~

- ~~Whether project-driven stormwater retrofit obligations can be met off site by retrofitting an equivalent area of state highway in targeted environmental priority locations (see Figure 3-5 for the Stormwater Retrofit Process for projects).~~
- ~~Whether it is cost-effective to provide stormwater management retrofits beyond what are called for under these requirements.~~

~~Projects must document the extent and type of any stormwater retrofit activity using the Stormwater Design Documentation Spreadsheet (SDDS) available at: www.wsdot.wa.gov/environment/waterquality/runoff/highwayrunoffmanual.htmhttp://www.wsdot.wa.gov/Design/Hydraulics/HighwayRunoffManual.htm~~

~~The following are the five general situations where a project may incur a stormwater retrofit:~~

~~A 1. WSDOT project that discharges to the Puget Sound Basin and is required by HRM Minimum Requirements to provide stormwater BMPs.~~

~~A Where WSDOT project that can cost-effectively retrofit existing impervious surfaces through opportunity based retrofits.~~

~~3. A WSDOT~~

~~2. In areas identified as stand-alone stormwater retrofit high-priority stormwater retrofitsproject.~~

~~3. Where a TDA does not provide all the required flow control for replaced impervious surfaces after providing as much flow control as possible on the project site.~~

~~4. Where a TDA does not provide all the required runoff treatment for replaced pollution-generating impervious surfaces (PGIS) after providing as much runoff treatment as possible on the project site.~~

~~5. In western Washington, where the project provides flow control to predeveloped "existing land cover" conditions.~~

~~3-6.13-4.2 3-4.2~~ Project-~~T~~triggered ~~Retrofitting Existing Impervious Surfaces and Stand-Alone~~ Stormwater Retrofit Projects ~~Within the Puget Sound Basin~~

There are two types of project-triggered retrofits that could occur on a project. The first type is statewide and has to do with replaced impervious surfaces and replaced PGIS. The second type has to do with projects within the Puget Sound Basin.

3-4.2.1 Project-Triggered Stormwater Retrofits Statewide

Statewide, projects may have the requirements where the replaced impervious surface requirements (Figure 3-1 Step 4) and/or replaced PGIS (Figure 3-2 Step 6) are applicable and are subject to flow control and/or runoff treatment. These situations constitute a project-triggered retrofit and should be documented in the SDDS.

3-4.2.2 Project-Triggered Retrofits within the Puget Sound Basin

A WSDOT project~~s~~ within the Puget Sound Basin has~~ve~~ additional project-triggered stormwater retrofit requirements when the project~~s~~ adds new impervious surface and meets or exceeds the thresholds that trigger runoff treatment or flow control requirements (i.e., Minimum Requirements 5 or 6) in any threshold discharge area~~, as defined in Section 3-4.1~~.

~~Accounting and Reporting for project-triggered retrofits within the Puget Sound Basin:~~ The PEO ~~Project designers~~ must perform a Stormwater Retrofit Cost-Effectiveness~~7~~ and Feasibility~~6~~ (RCEF) analysis to determine and document the extent to which retrofit obligations can be met within the project limits. The RCEF analysis will determine if it is cost-effective[6] and feasible[7] to retrofit all existing impervious surfaces and existing PGIS within the project. If the RCEF analysis shows it is not cost-effective or feasible to treat all existing impervious surfaces and existing PGIS within the project, then the PEO has three options:~~Project designers must document the amount of stormwater retrofit done on each project along with applicable stormwater retrofit cost information in the Stormwater Design Documentation Spreadsheet available at: . Within the Puget Sound Basin, projects triggering retrofit requirements must either:~~

- Retrofit, at a minimum, the amount of existing impervious surface and existing PGIS~~pollutant generating impervious surface~~ within the project limits that equates to

[6] Retrofitting for stormwater treatment and flow control is cost-effective if the cost to retrofit all the existing impervious surfaces and existing pollution generating impervious surfaces on the project does not exceed 20% of the cost to meet stormwater treatment and flow control requirements for the new impervious surfaces and new pollution generating impervious surfaces on the project.

[7] Feasible means there are no physical site limitations such as geographic or geologic constraints, steep slopes, soil instability, proximity to water bodies, presence of significant cultural resources, or shallow water tables (or other applicable factors contained in WSDOT's RCEF analysis document)

20% of the cost to meet stormwater requirements for the new impervious surfaces and new pollutant generating impervious surface (i.e., 20% cost obligation);

- Transfer an amount of money equal to the 20% cost obligation to fund stand-~~-~~alone stormwater retrofit projects within the Puget Sound Basin; however, projects with high priority retrofit areas (see Section 3-4.1 for a discussion on stormwater retrofit prioritization ~~section for more details~~) falling within their project boundaries cannot use this option; OR
- Meet the 20% cost obligation within the project site to the extent feasible[6] and transfer funds equivalent to the unmet balance to fund stand-alone stormwater retrofit projects within the Puget Sound Basin.

The PEO Accounting and Reporting for project-triggered retrofits within the Puget Sound Basin: Project designers must perform a Stormwater Retrofit Cost-Effectiveness[7] and Feasibility[6] (RCEF) analysis to determine and document the ~~extent to which retrofit obligations can be~~ met within the project limits. Project designers must document the amount of stormwater retrofit done on each project along with applicable stormwater retrofit cost information in the Stormwater Design Documentation Spreadsheet available at: http://www.wsdot.wa.gov/Design/Hydraulics/HighwayRunoffManual.htm.

must document the amount of stormwater retrofit completed on the project along with other applicable stormwater retrofit information in the SDDS available at:
http://www.wsdot.wa.gov/Design/Hydraulics/HighwayRunoffManual.htm

~~Also record the type of treatment needed in the TDA along with the TDA's projected ADT and other information supporting the required runoff treatment type (basic, enhanced, phosphorous control, and/or oil control).~~

~~Document the extent and type of any stormwater retrofit activity in the Hydraulic Report and the SDDS.~~ ~~Highway projects in the Puget Sound basin that add new impervious surfaces and exceed the thresholds that trigger runoff treatment or flow control requirements (i.e., Minimum Requirements 5 and 6) in any TDA, must either:~~

~~i. Retrofit for runoff treatment and/or flow control,[8] at a minimum, the amount of existing untreated impervious surface within the project limits that equates to 20% of the cost to meet stormwater requirements for the new impervious surfaces (i.e., *20% cost obligation*);~~

~~ii. Transfer an amount of money equal to the *20% cost obligation* to fund stand-alone stormwater retrofit projects; OR~~

[8] The type of retrofit is determined by the retrofit requirements of the TDA.

~~iii. Meet the *20% cost obligation* within the project site to the extent feasible[9] and transfer funds equivalent to the unmet balance to fund stand-alone stormwater retrofit projects.~~

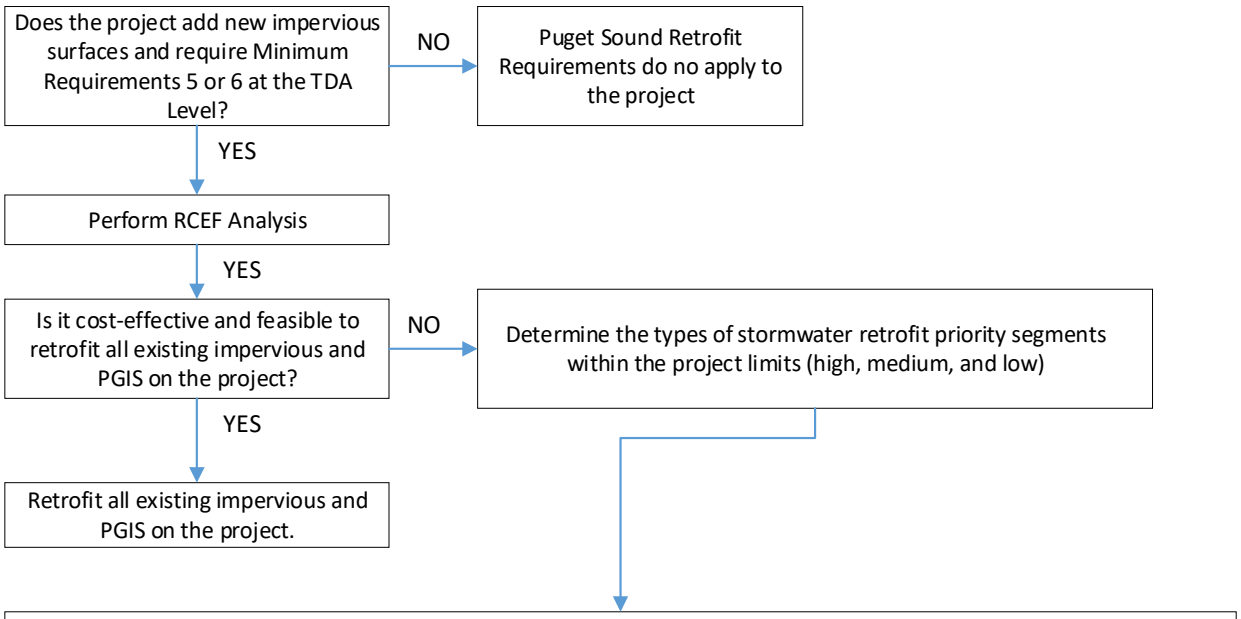
~~Highway projects with *high priority* retrofit locations falling within their project boundaries cannot use *Option ii.*~~

~~The project must perform a stormwater retrofit cost-effectiveness[10] and feasibility (RCEF) analysis per footnotes 5 and 6 to determine and document the extent to which retrofit obligations can be met within the project limits. A detailed guide to completing the RCEF analysis is available at:~~
~~www.wsdot.wa.gov/environment/waterquality/runoff/highwayrunoffmanual.htmhttp://www.wsdot.wa.gov/Design/Hydraulics/HighwayRunoffManual.htm~~

WSDOT regions may request a variance to exceed the 20% cost obligation~~limit~~ for extenuating circumstances such as the project falls within a high-priority retrofit location, the project has realized reduced costs in other project elements, and/or the cost exceedance is not significantly above 20%~~ (see Figure 3-4)~~.

[9] *Feasible* means there are no physical site limitations such as geographic or geologic constraints, steep slopes, soil instability, proximity to water bodies, presence of significant cultural resources, or shallow water tables (or other applicable factors listed in the RCEF)~~contained in Appendix 2A – Engineering and Economic Feasibility for Construction of Stormwater Management Facilities~~).

[10] Retrofitting for stormwater treatment and flow control **is cost-effective if** the cost to retrofit all the existing untreated impervious surfaces does not exceed 20% of the cost to meet stormwater treatment and flow control requirements for the new impervious surfaces.

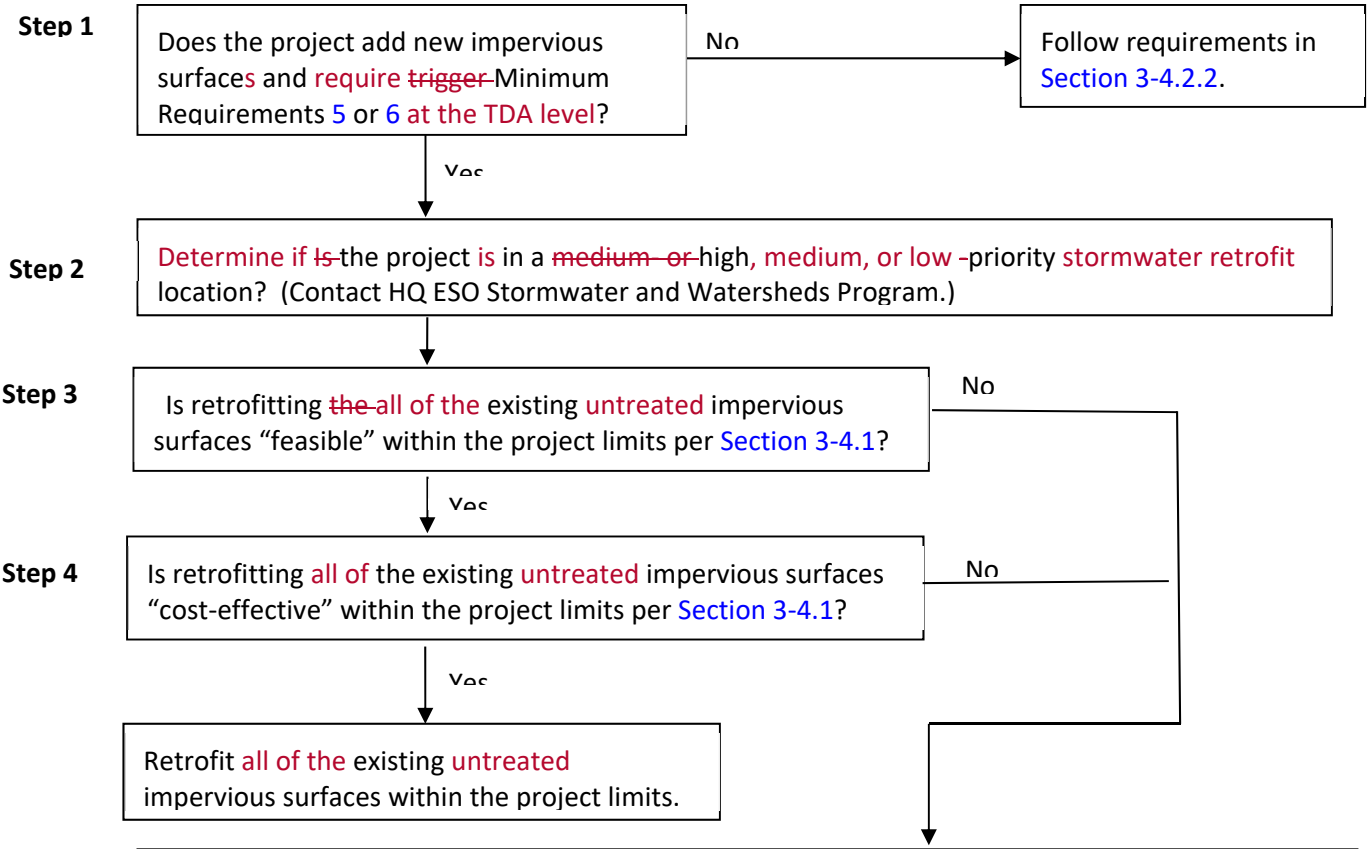


The project must do one of the following:

- Option 1: Retrofit, at a minimum, the amount of existing impervious surface and existing pollutant generating impervious surface within the project limits that equates to 20% of the cost to meet stormwater requirements for the new impervious surfaces and new pollutant generating impervious surface (i.e., 20% cost obligation);
- Option 2: Transfer an amount of money equal to the 20% cost obligation to fund stand-alone stormwater retrofit projects within the Puget Sound Basin; however, **projects with high priority retrofit segments falling within their project boundaries cannot use this Option 2.**
- Option 3: Meet the 20% cost obligation within the project site to the extent feasible1 and transfer funds equivalent to the unmet balance to fund stand-alone stormwater retrofit projects within the Puget Sound Basin.

~~The RCEF analysis does not apply to any project-triggered retrofit requirements needed to comply with Section 3-2.~~

~~When the project deems retrofitting all existing areas as either infeasible per Appendix 2A or not cost-effective per the RCEF, or if the project transfers money to fund stand-alone retrofit projects, the project must document the cost information developed and rationale to ensure compliance with this requirement in the *Stormwater Design Documentation Spreadsheet.*~~



For projects that have Medium or Low stormwater retrofit priority, ~~The project must do o~~one of the three below options ~~following~~must be done:

Option 1: Retrofit an amount of existing untreated impervious surface within the project limits that equates to ~~can be retrofitted for the amount of money equal to~~ 20% of the cost to treat the new impervious surfaces on the project (i.e., 20% cost obligation),

OR

Option 2: Meet the 20% cost obligation within the project by r~~R~~etrofit ~~an equivalent amount of~~ existing untreated impervious surfaces ~~off site, at a~~ and transfer funds equivalent to the unmet balance to the Subprogram I-4, Stormwater Retrofit Category~~high priority stormwater retrofit location, at a cost up to 20% of the cost of treating the new impervious surfaces,~~,

OR

Option 3: Transfer an amount of money equal to the 20% ~~of the~~ cost obligation ~~to treat the new impervious surfaces,~~ to the Subprogram I-4, Stormwater Retrofit Category.

~~3.~~ Projects that have a High stormwater retrofit priority can only use Options 1 and 2 above.

Figure 3-4 Stormwater retrofit process for WSDOT projects within the Puget Sound basin.

3-4.3 Project-triggeredRetrofitting Existing Impervious Surfaces and Stand-Alone Stormwater Retrofit Projects Outside the Puget Sound Basin

Outside the Puget Sound Basin, project-triggered stormwater retrofits occur when a transportation project's boundaries include untreated impervious surfaces, and the project triggers requirements in Sections 3-3 and 3-4 of the HRM to add stormwater treatment and/or flow control. Project- triggered retrofits are funded by project funds.

Mechanics: Project designers follow the HRM (Figures 3-1, 3-2, and 3-3) statewide to determine if a project triggers retrofit requirements.

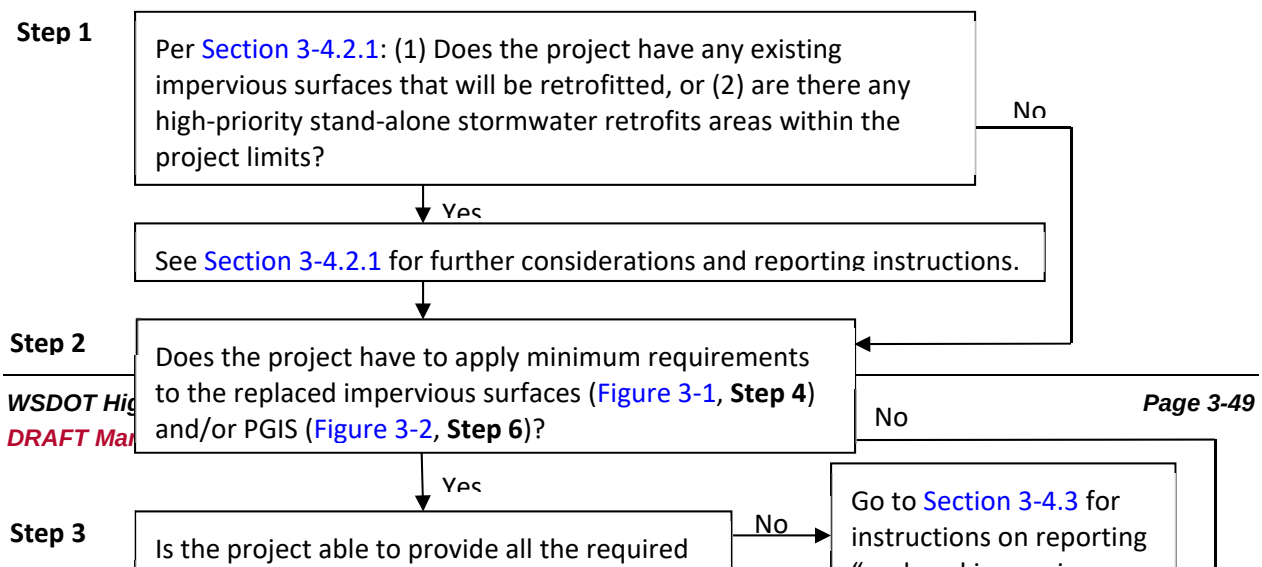
Outside the Puget Sound Basin, projects triggering retrofit requirements must retrofit applicable replaced impervious surfaces and/or replaced pollutant generating impervious surfaces within the project boundaries. For projects outside the Puget Sound Basin, per HRM Section 3-4.2 through 3-4.4 and HRM Figure 3-5, any remaining retrofit obligations not taken care of on the project site due to infeasibility, the project has an additional option to retrofit an equivalent area of state highway off- site.

3-6.1 Accounting and Reporting: All project designers must document the amount of stormwater retrofit done on each project along with applicable stormwater retrofit cost information in the Stormwater Design Documentation Spreadsheet available at: http://www.wsdot.wa.gov/Design/Hydraulics/HighwayRunoffManual.htm.

Also record the type of treatment needed in the TDA along with the TDA's projected ADT and other information supporting the required runoff treatment type (basic, enhanced, phosphorous control, and/or oil control).

Document the extent and type of any stormwater retrofit activity in the Hydraulic Report and the SDDS.

Figure 3-5 outlines the decision-making process for determining stormwater retrofit obligations and opportunities for WSDOT projects outside of the Puget Sound basin.



~~**Figure 3-5 Stormwater retrofit process for WSDOT projects outside of the Puget Sound basin.**~~

~~3-6.1.28~~3-4.3 Opportunity-~~B~~based Stormwater Retrofits~~Existing Impervious Surfaces~~

Opportunity-based stormwater retrofits occur when projects elect to go beyond the HRM Minimum Requirements and provide~~add~~ stormwater treatment and flow control for runoff from existing impervious surfaces and existing PGIS~~pollutant generating impervious surface following guidelines in the HRM~~. Opportunity-based retrofits help WSDOT achieve its goal to treat all existing highway pavement. The retrofit should strive for full HRM standards if feasible. In many cases, the stormwater retrofit opportunity may be maximized by building stormwater BMPs to partial HRM standards. The stormwater BMP used for opportunity based retrofit should be documented as designed to full or partial HRM standards in the SDDS and the Stormwater BMP Specifications (SWABS) web application. SWABS is only accessible to WSDOT staff.

3-5 Stormwater Adjustments and Deviations to the HRM

Instances exist where the HRM's policies and guidelines do not seem appropriate for a particular project situation. There are two ways the PEO can take towards compliance in these situations. The first path is for the PEO to seek an **Adjustment to the HRM**. The second pathway is for the PEO to seek a stormwater **Deviation to the HRM**.

3-5.1 Adjustments ~~to the HRM~~

Adjustments to the Minimum Requirements may be granted by WSDOT provided that a written finding of fact is prepared, that addresses the following:

- The adjustment provides substantially equivalent environmental protection.
- Based on sound Engineering practices, the objectives of safety, function, environmental protection, and facility maintenance are met.

3-5.2 ~~Stormwater~~ Deviations ~~to the HRM~~

For these situations, WSDOT's *Demonstrative Approach Team* (DAT), which includes staff from Ecology and WSDOT, reviews and approves (if appropriate) alternative stormwater design proposals. While stormwater deviations rarely relieve the project from minimum requirement obligations, the DAT can approve an alternate compliance pathway to meeting the intent of the minimum requirements using a project-specific demonstrative approach. However, prior to considering the demonstrative approach pathway, explore whether the equivalent area approach, described in Sections 3-3.5 and 3-3.6, will allow the project to meet the manual's requirements.

Highway projects seeking an alternative compliance pathway typically experience site-specific limitations (e.g., infrastructural, geographical, geotechnical, hydraulic, environmental, or benefit/cost related) that present an obstacle to fully meeting minimum requirements, particularly runoff treatment and flow control, within the project right of way. An example might involve efforts to avoid building a detention pond in a heavily forested area and instead opting for an off-site in-kind (nonforested) location to achieve the required flow control obligation.

The PEO must make a formal assessment to identify constraints on meeting the minimum requirements in the TDA. Appendix 2A includes guidelines for this assessment, referred to as an *engineering and economic feasibility* (EEF) evaluation. Perform the EEF assessment as early as possible in project development to document the basis for seeking an alternative compliance pathway. The PEO must also formulate a workable alternative stormwater design (deviation) that will meet the intent of the HRM (i.e., does not adversely affect the water quality and

satisfies state and federal water quality laws). Contact the Region Hydraulics Engineer and the HQ Hydraulics Section to begin the demonstrative approach process.[11]

Scale the documentation below to the complexity of the problem. Provide a brief memo or report that describes why typical HRM BMPs or processes cannot be used on site and how the proposed alternative meets the intent of the HRM. Include sufficient photos, calculations, plans, drawings, or other backup documentation that supports the conclusions that the demonstrative approach is necessary and the proposed solution meets the intent of the HRM.

The steps below describe the general process for seeking a HRM deviation review and approval:

1. The PEO identifies the requirements or guidelines in the HRM that the project proposes to deviate from and consults with Region Hydraulics Engineer and Headquarters Hydraulics Section for concurrence and the required documentation.
2. The PEO~~design team~~ provides the justification for the deviation using the EEF evaluation~~assessment~~. The PEO~~design team~~ also provides the alternative design and shows how it achieves the intent of the HRM policy or guidance. Consult with the Region Hydraulics Engineer~~Office~~ and HQ Hydraulics Section for assistance on possible alternative designs.
3. The PEO~~design team~~ submits the documentation (#1 and #2 above) to the DAT for review and approval.
4. If approved, the DAT issues a joint WSDOT and Ecology letter to the PEO~~project office~~ authorizing the alternative stormwater compliance approach.

If approved, the PEO~~design team~~ shall include all of the above documentation in the appendix of the project's Hydraulic Report.

The PEO should coordinate potential DAT submittals with the DAT team leader as early as possible. For design-build-bid projects, this would occur during project development. For design-build projects, this would occur during the Request for Proposal (RFP) development.

~~Stand-Alone Stormwater Retrofit Projects~~

~~Standalone stormwater retrofits, funded through the Environmental Retrofit sub-program (I-4), occur when projects are initiated to address stormwater treatment and/or flow control at a prioritized location defined by the stormwater needs prioritization process. Stand-alone stormwater retrofits include Total Maximum Daily Load (TMDL) retrofit obligations assigned in Appendix 3 of WSDOT's NPDES Municipal Permit (WSDOT's Permit), and potentially Superfund~~

[11] In addition to initiating the demonstrative approach, the Region Hydraulics Engineer or the HQ Hydraulics Section staff may be able to provide guidance or alternatives that allow the project to meet its stormwater requirements without engaging the DAT.

~~remediation triggered retrofits[12], as the highest priorities (i.e., these two situations result in the highest scores during the prioritization process). WSDOT's Permit describes stormwater retrofit related requirements. WSDOT's associated Stormwater Management Program Plan (SWMPP) describes how WSDOT implements those stormwater retrofit requirements. Section 6.6 and Table 6-1 in the SWMPP defines WSDOT's Stormwater Retrofit Prioritization Scheme (i.e. needs prioritization process) for stand-alone stormwater retrofit segments. It involves a qualitative and quantitative process for assigning a retrofit priority value (high, medium, or low) to specific highway segment locations. Prioritized highway segments are used in the stand-alone and Puget Sound Basin project-triggered stormwater retrofit processes.~~

~~Statewide stand-alone stormwater retrofit funding is appropriated in I-4 by the Legislature. Puget Sound basin specific stand-alone stormwater retrofits also receive funds that are transferred from projects within the Puget Sound basin (Project-Triggered retrofit) as described in Section 3-4.2.2 below.~~

~~Project-Triggered Stormwater Retrofit Projects~~

~~There are two types of project-triggered retrofits that could occur on a project. The first type is statewide and has to do with replaced impervious surfaces and replaced PGIS. The second type has to do with project within the Puget Sound~~

~~Mechanics: Projects may construct opportunity-based retrofits statewide when it is cost-effective[7] to provide stormwater management beyond what is required to comply with project-triggered retrofit requirements. When making decisions about whether to construct an opportunity-based retrofit, project designers must consider the funding guidelines in the HRM Section 3-4.2.1.~~

~~Accounting and Reporting: Stormwater treatment and flow control BMPs constructed as opportunity-based retrofits are documented in WSDOT's Stormwater BMP Specifications (SWABS) database and the Stormwater Design Documentation Spreadsheet.~~

~~If thresholds in Figure 3-1, Step 4, are exceeded, and for each TDA that exceeds thresholds in Figure 3-3, Step 8, after providing as much flow control as possible on the project site, record the amount of replaced impervious surface that does not receive flow control. Record quantities to the nearest tenth of an acre using the SDDS at: www.wsdot.wa.gov/environment/waterquality/runoff/highwayrunoffmanual.htm~~

~~If thresholds in Figure 3-2, Step 6, are exceeded, and for each TDA that exceeds thresholds in Figure 3-3, Step 7, after providing as much runoff treatment as possible on the project site,~~

~~[12] A Superfund site is a contaminated location included on the National Priorities List by the EPA that has been or will be remediated (cleaned up) – more information at: Superfund Cleanup Process | Superfund | US EPA.~~

~~record the amount of replaced PGIS that does not receive runoff treatment. Record quantities to the nearest tenth of an acre using the SDDS at: www.wsdot.wa.gov/environment/waterquality/runoff/highwayrunoffmanual.htm~~

~~As described in Section 1-1, the ultimate goal is to provide practicable stormwater management for runoff from existing impervious surfaces that do not have treatment or flow control or for which treatment or flow control is substandard. As you scope (or revise the scope of) affected projects, you will need to determine whether it is cost-effective to provide stormwater management retrofits beyond what is called for under the HRM's minimum requirements. In making this decision, WSDOT follows an approach that ensures it does not circumvent the Legislature's authority to determine where to invest financial resources. At the same time, the department's goal is to retrofit existing impervious surfaces where a significant amount of pavement is added on a project.~~

~~WSDOT has adopted a departmental budget structure with a specific category for retrofitting existing impervious surfaces in order to meet one of the requirements of WAC 173-270-060. This budget structure allows the department to include the work from one project category in another category if it does not add significant cost to the project. In accordance with this guideline, the HQ Strategic Planning and Programming Office has established the following guidelines when making decisions about adding stormwater retrofits of existing impervious surfaces into new improvement and preservation projects:~~

~~1. Mobility projects (I-1 subprogram) can always consider including the cost of retrofitting existing impervious surfaces.~~

~~2. Safety projects (I-2 subprogram) can include the retrofitting of existing impervious surfaces only if the cost to retrofit all existing impervious surfaces does not exceed an additional 20% of the cost of treating new impervious surfaces. The region may request a variance from this limit for extenuating circumstances.~~

~~3. Economic Initiatives (I-3 subprogram, *except for* Four-Lane Trunk projects) can include the retrofitting of existing impervious surfaces only if the cost to retrofit all existing impervious surfaces does not exceed an additional 20% of the cost of treating new impervious surfaces. The region may request a variance from this limit for extenuating circumstances.~~

~~4. Four-Lane Trunk projects in the I-3 subprogram can always consider including the retrofitting of existing impervious surfaces.~~

~~5. Environmental Retrofit projects (I-4 subprogram, *except for* the Stormwater Retrofit category) do not add new impervious surfaces and cannot retrofit existing impervious surfaces. The region may request a variance from this limit for extenuating circumstances.~~

~~6. For those safety and economic initiative projects that exceed the 20% limit, and where the HQ Project Control and Reporting Office and region concur, the region can submit a request for funding from the I-4 Stormwater Retrofit category. These requests will be prioritized with the other stormwater retrofit needs already identified for funding by the Legislature.~~

7. Paving projects (P-1 subprogram) can consider retrofitting existing impervious surfaces only for projects involving the total replacement of existing concrete lanes. On projects that replace only the existing asphalt shoulder with concrete, retrofitting is not required.

Direct questions on applying the above guidelines to the Region Program Management Office, with backup (if needed) to the HQ Strategic Planning and Programming Systems' Analysis and Program Development Office. Finally, consider budget implications and Ecology-approved basin plan status prior to including retrofit as part of a project's scope.

Record associated costs for providing flow control for all the runoff from new, replaced, and existing impervious areas in the project's Hydraulic Report. Document the extent and type of any stormwater retrofit activity in the Hydraulic Report and the Stormwater Design Documentation Spreadsheet (SDDS) at:
www.wsdot.wa.gov/environment/waterquality/runoff/highwayrunoffmanual.htm

3-6.1.29 I-4 Subprogram Environmental Retrofit Stormwater Projects

Evaluate I-4 subprogram environmental retrofit stormwater projects located within the project limits for incorporation by the project office.

3-6.2 Off-site Stormwater RetrofitReplaced Impervious Surface

If thresholds in Figure 3-1, Step 4, are exceeded, and for each TDA that exceeds thresholds in Figure 3-3, Step 8, after providing as much flow control as possible on the project site, record the amount of replaced impervious surface that does not receive flow control. Record quantities to the nearest tenth of an acre using the SDDS at:
www.wsdot.wa.gov/environment/waterquality/runoff/highwayrunoffmanual.htm

The amount of replaced impervious surface that does not receive flow control, and/or the amount of replaced PGIS that does not receive runoff treatment, within the project area can be met off site by retrofitting an equivalent area of state highway for flow control in a targeted stormwater retrofit priority location. Contact the HQ ESO Stormwater and Watersheds Program for assistance in identifying eligible highway segments to meet this off-site retrofit obligation.

3-6.3 Replaced PGIS

If thresholds in Figure 3-2, Step 6, are exceeded, and for each TDA that exceeds thresholds in Figure 3-3, Step 7, after providing as much runoff treatment as possible on the project site, record the amount of replaced PGIS that does not receive runoff treatment. Record quantities to the nearest tenth of an acre using the SDDS at:
www.wsdot.wa.gov/environment/waterquality/runoff/highwayrunoffmanual.htm

Also record the type of treatment needed in the TDA along with the TDA's projected ADT and other information supporting the required runoff treatment type (basic, enhanced, phosphorous control, and/or oil control).

~~Document the extent and type of any stormwater retrofit activity in the Hydraulic Report and the SDDS.~~

~~The amount of replaced PGIS that does not receive runoff within the project area can be met off site by retrofitting an equivalent area of state highway for runoff treatment in a targeted stormwater retrofit priority location. Contact the HQ ESO Stormwater and Watersheds Program for assistance in identifying eligible highway segments to meet this off-site retrofit obligation.~~

~~3-6.4 Effective Impervious Surface in Western Washington~~

~~For every TDA that requires flow control per Figure 3-3, Step 8, determine the predeveloped conditions for the effective impervious surfaces. Where the predeveloped condition for the effective impervious surfaces is considered to be an "existing land cover" (usually pasture or grass) and not assumed to be a "historic land cover," determine and document the flow control volumetric difference between the two land cover conditions.~~

~~Using MGSFlood or another Ecology-approved continuous simulation model, perform two analyses to determine the required flow control volumes for the two different predeveloped conditions in the TDA. Subtracting the two volumes gives the volumetric difference between using "existing land cover" conditions and "historic land cover" conditions for the TDA. Record this number as part of the Stormwater Retrofit Analysis. Record the quantity in cubic feet on the SDDS at:~~
~~www.wsdot.wa.gov/environment/waterquality/runoff/highwayrunoffmanual.htm~~

~~This volumetric difference constitutes a stormwater retrofit obligation for the project that can be met off site by providing an equivalent volume of detention in a targeted stormwater retrofit priority location. Contact the HQ ESO Stormwater and Watersheds Program for assistance in identifying eligible highway segments to meet this off-site retrofit obligation.~~