



# Protecting Seattle's Waterways

## Volume 1: Project Minimum Requirements

CITY OF SEATTLE  
STORMWATER MANUAL

FINAL DRAFT  
SEPTEMBER 2015



**Note:**

Some pages in this document have been purposely skipped or blank pages inserted so that this document will copy correctly when duplexed.

With a publication of this size and complexity there will inevitably be errors that must be corrected and clarifications that are needed. There will also be new information and technological updates. The City intends to publish correction, updates, and new technical information on our Stormwater Code website (<http://www.seattle.gov/dpd/codesrules/codes/stormwater/default.htm>). The City will not use the website to make revisions in key policy areas - such as the thresholds and minimum requirements in Volume 1. Please check this site periodically for corrections and updates.



<b>DPD</b>	<b>Director's Rule 21-2015</b>
<b>SPU</b>	<b>Director's Rule DWW-200</b>

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# CHAPTER 1 – INTRODUCTION

## 1.1. Purpose of This Manual (Volumes 1 through 5 and Appendices)

In addition to meeting the specific stormwater needs of the City of Seattle (City), the Stormwater Code meets certain requirements that apply to the City from the 2013-2018 Phase I National Pollutant Discharge Elimination System and State Waste Discharge General Permit for Discharges from Large and Medium Municipal Separate Storm Sewer Systems, modified effective January 16, 2015 (referred to as the Phase I NPDES Municipal Stormwater Permit). Coverage under the general permit is issued to the City by the Washington State Department of Ecology (Ecology) pursuant to the federal Clean Water Act and state law. One of the conditions of this permit requires the City to adopt and make effective a local program to prevent and control the impacts of stormwater runoff from new development, redevelopment and construction activities. This is accomplished, in large measure, through the Seattle Stormwater Code and its associated Directors' Rule (this Manual) [which Ecology has determined to meet the requirements contained in the Phase I NPDES Municipal Stormwater Permit], with reference to the *Stormwater Management Manual for Western Washington* (Ecology 2014).

The City's Stormwater Code is contained in the Seattle Municipal Code (SMC), Chapters 22.800 - 22.808. The Stormwater Code contains regulatory requirements that provide for and promote the health, safety, and welfare of the general public. The provisions of the Stormwater Code are designed to accomplish the following:

1. To protect, to the greatest extent practicable, life, property and the environment from loss, injury, and damage by pollution, erosion, flooding, landslides, strong ground motion, soil liquefaction, accelerated soil creep, settlement and subsidence, and other potential hazards, whether from natural causes or from human activity.
2. To protect the public interest in drainage and related functions of drainage basins, watercourses, and shoreline areas.
3. To protect receiving waters from pollution, mechanical damage, excessive flows and other conditions that will increase the rate of downcutting, stream bank erosion, and/or the degree of turbidity, siltation, and other forms of pollution, or which will reduce their low flows or low levels to levels which degrade the environment, reduce recharging of groundwater, or endanger aquatic and benthic life within these receiving waters and receiving waters of the state.
4. To meet the requirements of state and federal law and the City's municipal stormwater NPDES permit.
5. To protect the functions and values of environmentally critical areas as required under the state's Growth Management Act and Shoreline Management Act.
6. To protect the public drainage system from loss, injury, and damage by pollution, erosion, flooding, landslides, strong ground motion, soil liquefaction, accelerated soil

creep, settlement and subsidence, and other potential hazards, whether from natural causes or from human activity.

7. To fulfill the responsibilities of the City as trustee of the environment for future generations.

To support implementation of the Stormwater Code, the Director of Seattle Public Utilities (SPU) and the Director of the Department of Planning and Development (DPD) promulgate rules that provide specific technical requirements, criteria, guidelines, and additional information. This Directors' Rule consists of a five-volume City Stormwater Manual and nine appendices.

## 1.2. How to Use this Manual (Volumes 1 through 5 and Appendices)

The City's Stormwater Manual includes the following five volumes:

- *Volume 1: Project Minimum Requirements* provides information regarding how to apply the minimum requirements contained in the Stormwater Code. It also provides site assessment and planning steps and requirements for drainage control review submittals.
- *Volume 2: Construction Stormwater Control* contains temporary erosion and sediment control technical requirements, which are required to prevent contaminants from leaving the project site during construction.
- *Volume 3: Project Stormwater Control* presents approved methods, criteria, and details for analysis and design of on-site stormwater management, flow control, and water quality treatment best management practices (BMPs).
- *Volume 4: Source Control* provides information to individuals, businesses, and public agencies in Seattle to implement BMPs for controlling pollutants at their source and preventing contamination of stormwater runoff.
- *Volume 5: Enforcement* provides standards, guidelines, and requirements for enforcing the Stormwater Code.

The City's Stormwater Manual includes the following nine appendices:

- *Appendix A: Definitions* provides terminology for all five volumes of the Stormwater Manual.
- *Appendix B: Background Information on Chemical Treatment* provides supplemental information for Volume 2 (Construction Stormwater Control).
- *Appendix C: On-site Stormwater Management Infeasibility Criteria* provides a list of criteria to be evaluated for on-site stormwater management.
- *Appendix D: Subsurface Investigation and Infiltration Testing for Infiltration BMPs* describes subsurface report requirements, geotechnical explorations, four infiltration testing methods (Simple Test, Small Pilot Infiltration Test (PIT), large PIT, and deep infiltration test), infiltration rate correction factors, groundwater monitoring, and groundwater mounding analysis.

- *Appendix E: Additional Design Requirements* includes additional design requirements for flow control structures, flow splitters, flow spreaders, level spreaders, pipe slope drains, outlet protection, facility liners, and geotextiles. *Appendix E* also includes plant lists for biofiltration swales, sand filters, and wet ponds.
- *Appendix F: Hydrologic Analysis and Design* includes descriptions of acceptable methods for estimating the quantity and hydrologic characteristics of stormwater runoff, and the assumptions and data requirements of these methods.
- *Appendix G: Stormwater Control Operations and Maintenance Requirements* contains maintenance requirements for typical stormwater BMPs and components.
- *Appendix H: Financial Feasibility Documentation for Vegetated Roofs and Rainwater Harvesting* provides additional guidance on the required documentation to prove financial infeasibility of vegetated roofs or rainwater harvesting.
- *Appendix I: Integrated Pest Management Plan* provides supplemental information for Volume 4 (Source Control).

### 1.3. Purpose of Volume 1

*Volume 1 – Project Minimum Requirements* describes and contains minimum requirements for all types of land development and redevelopment. It also provides site assessment and planning steps and drainage control review requirements.

### 1.4. How to Use this Volume

- *Chapter 1* outlines the purpose and content of the Stormwater Manual and this volume.
- *Chapter 2* outlines steps to determine a project's minimum requirements.
- *Chapter 3* describes the minimum requirements for all projects.
- *Chapter 4* describes the minimum requirements for specific project types.
- *Chapter 5* describes the minimum standards for on-site stormwater management, flow control, and water quality treatment.
- *Chapter 6* describes the options for alternative compliance.
- *Chapter 7* summarizes site assessment and planning steps and key project components.
- *Chapter 8* summarizes the standard and comprehensive drainage review minimum submittal requirements.



# CHAPTER 2 – DETERMINING MINIMUM REQUIREMENTS

Per the Stormwater Code (SMC, Section 22.801.170), "project" means "the addition or replacement of hard surface or the undertaking of land-disturbing activity on a site". A hard surface is defined as an impervious surface, a permeable pavement, or a vegetated roof. There are seven basic steps used to determine which minimum requirements for on-site stormwater management, flow control, and water quality treatment apply to a project:

- **Step 1** - Define the boundaries of the project site
- **Step 2** - Identify the type of project
- **Step 3** - Identify the receiving water and downstream conveyance
- **Step 4** - Perform site assessment and planning
- **Step 5** - Calculate new plus replaced hard surface and native vegetation conversion
- **Step 6** - Calculate new plus replaced pollution generating surface
- **Step 7** - Determine which minimum requirements apply

Note that these seven steps are focused on determining applicable minimum requirements for on-site stormwater management, flow control, and water quality treatment specifically. These seven steps are described in further detail below. In addition to determining the applicable minimum requirements, all projects shall also review and comply with all other Stormwater Code requirements, in particular the Minimum Requirements for All Discharges and All Real Property (SMC, Section 22.803) and the Minimum Requirements for All Projects (SMC, Section 22.805).

## 2.1. Step 1 – Define the Boundaries of the Project Site

The boundaries of the project site shall contain the discharge point, all land-disturbing activities, and all new and replaced hard surfaces. The boundary of the public right-of-way typically forms the boundary between project types if more than one project type exists. The project site may also include contiguous areas that are subject to the addition or replacement of hard surface or the undertaking of land-disturbing activity. Defining project boundaries will help identify the project type(s) in Step 2.

## 2.2. Step 2 – Identify the Type of Project

For the purposes of determining applicable minimum requirements, there are nine general classifications of projects:

1. A **single-family residential (SFR) project** (Figure 2.1) is defined in the Stormwater Code (SMC, Section 22.801.200) as:
  - A project that constructs one single-family dwelling unit located in land classified as being Single-family Residential 9,600 (SF 9600), Single-family Residential 7,200 (SF 7200), or Single-family Residential 5,000 (SF 5000) pursuant to SMC, Section 23.30.010,
  - The total new plus replaced hard surface is less than 10,000 square feet, and
  - The total new plus replaced pollution-generating hard surface (PGHS) is less than 5,000 square feet.

Note that projects with 10,000 square feet or more of new plus replaced hard surface each, or more than 5,000 square feet of PGHS each, are considered parcel-based projects.

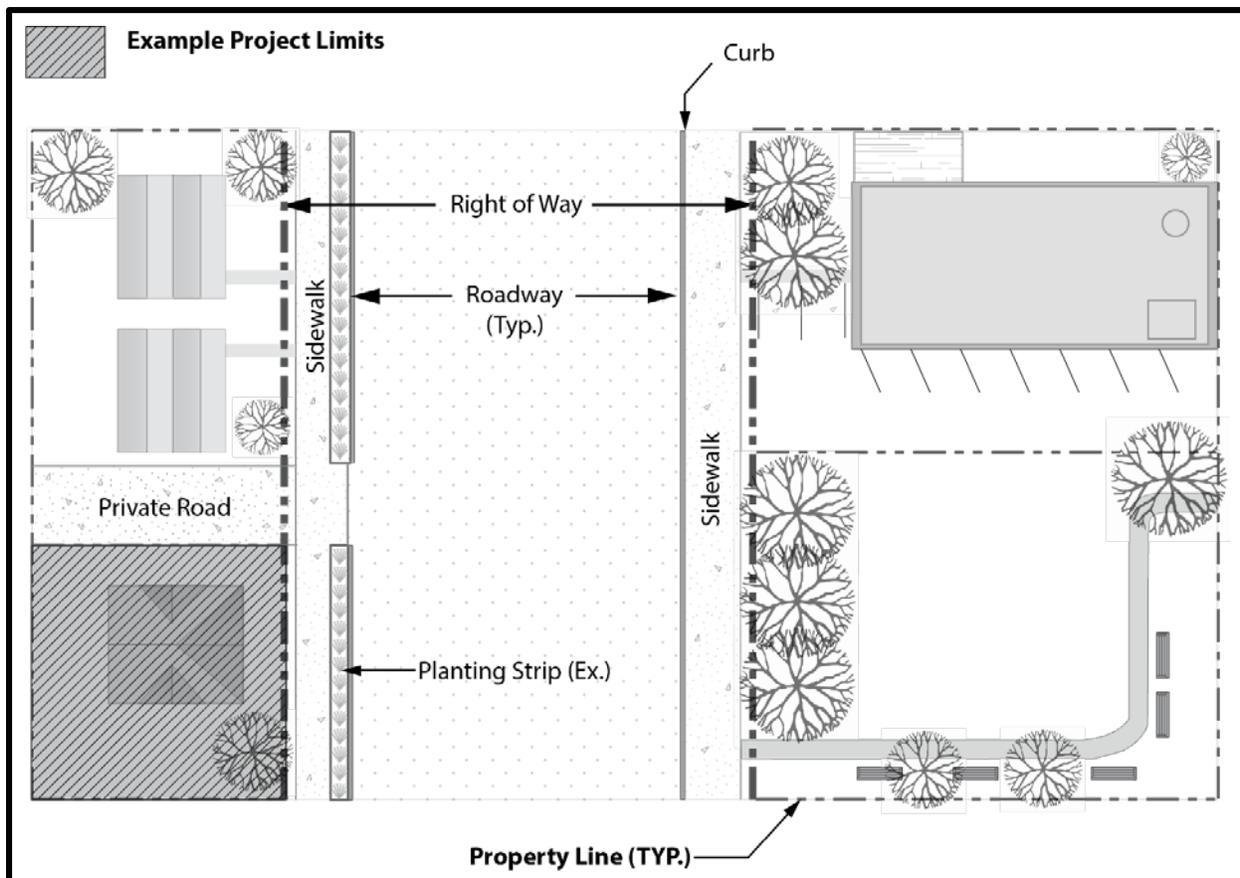


Figure 2.1. Single-family Residential Project Site Definition.

2. A **sidewalk project** (Figure 2.2) is defined as a project for the creation of a new sidewalk or replacement of an existing sidewalk, including any associated planting strip, apron, curb ramp, curb, or gutter, and necessary roadway grading and repair. If the total new plus replaced hard surface in the roadway exceeds 10,000 square feet, the entire project is a roadway project (SMC, Section 22.801.200).

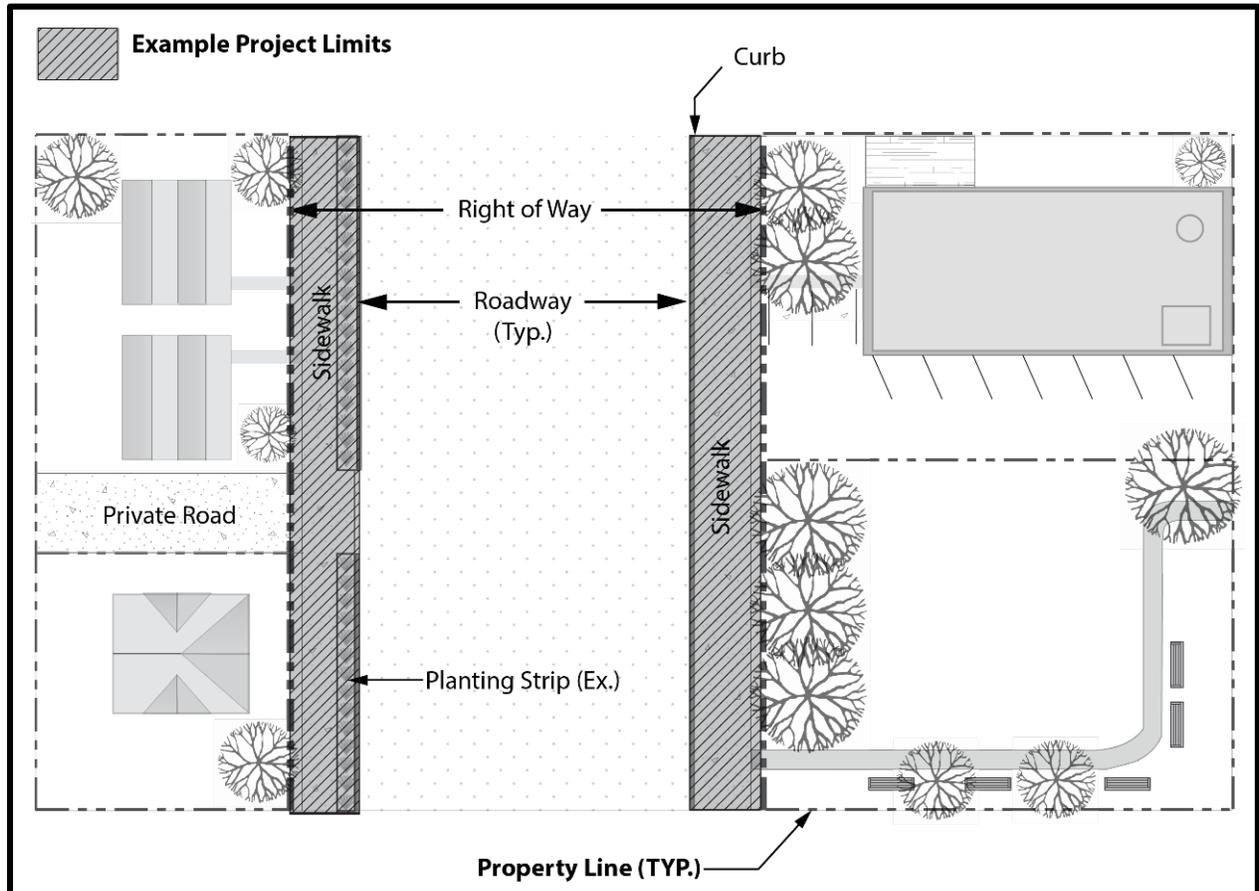


Figure 2.2. Sidewalk-only Project Site Definition.

3. A **trail project** (Figure 2.3) is defined as a project for the creation of a new trail or replacement of an existing trail, which does not contain PGHS (SMC, Section 22.801.210).

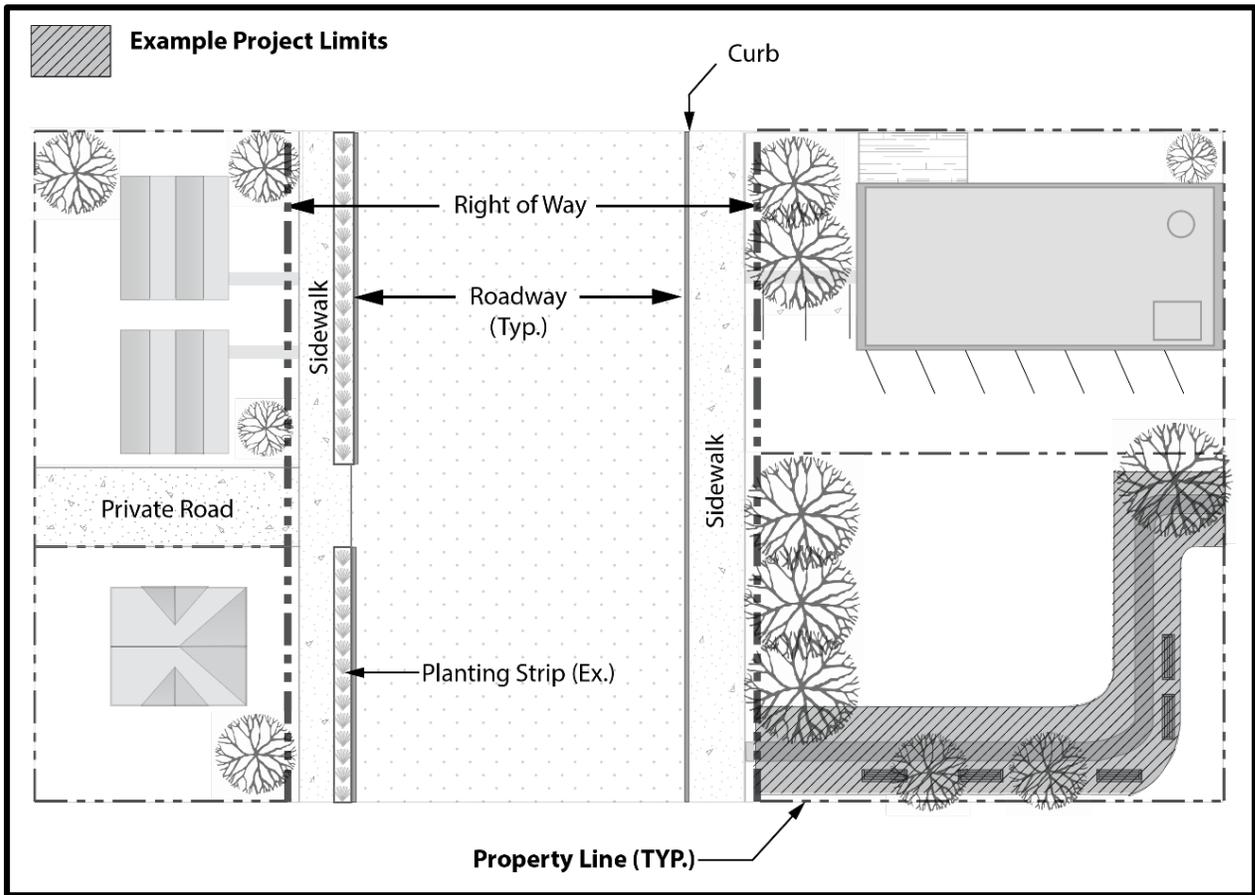


Figure 2.3. Trail Project Definition.

4. A **roadway project** (Figure 2.4) is defined as a project located in the public right-of-way and involves the creation of a new or replacement of an existing roadway or alley. The boundary of the public right-of-way shall form the boundary between the parcel and roadway portions of a project (SMC, Section 22.801.190). A roadway project can also include other improvements located in the public right-of-way.

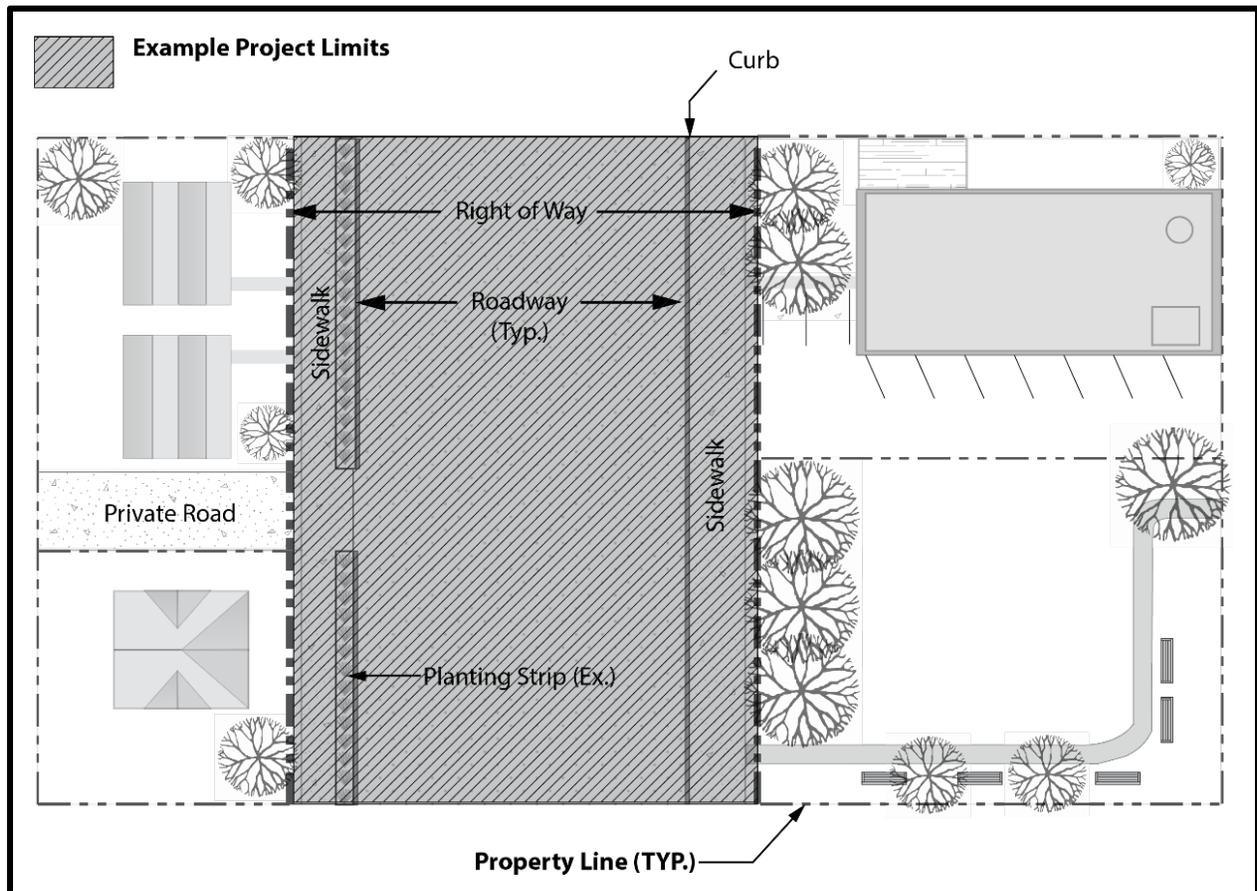


Figure 2.4. Roadway Project Site Definition.

5. A **parcel-based project** (Figure 2.5) means any project that is not a single-family residential project, roadway project, sidewalk project, or trail project. The boundary of the public right-of-way shall form the boundary between the parcel and roadway portions of a project (SMC, Section 22.801.170). Examples include commercial developments and multi-family developments.

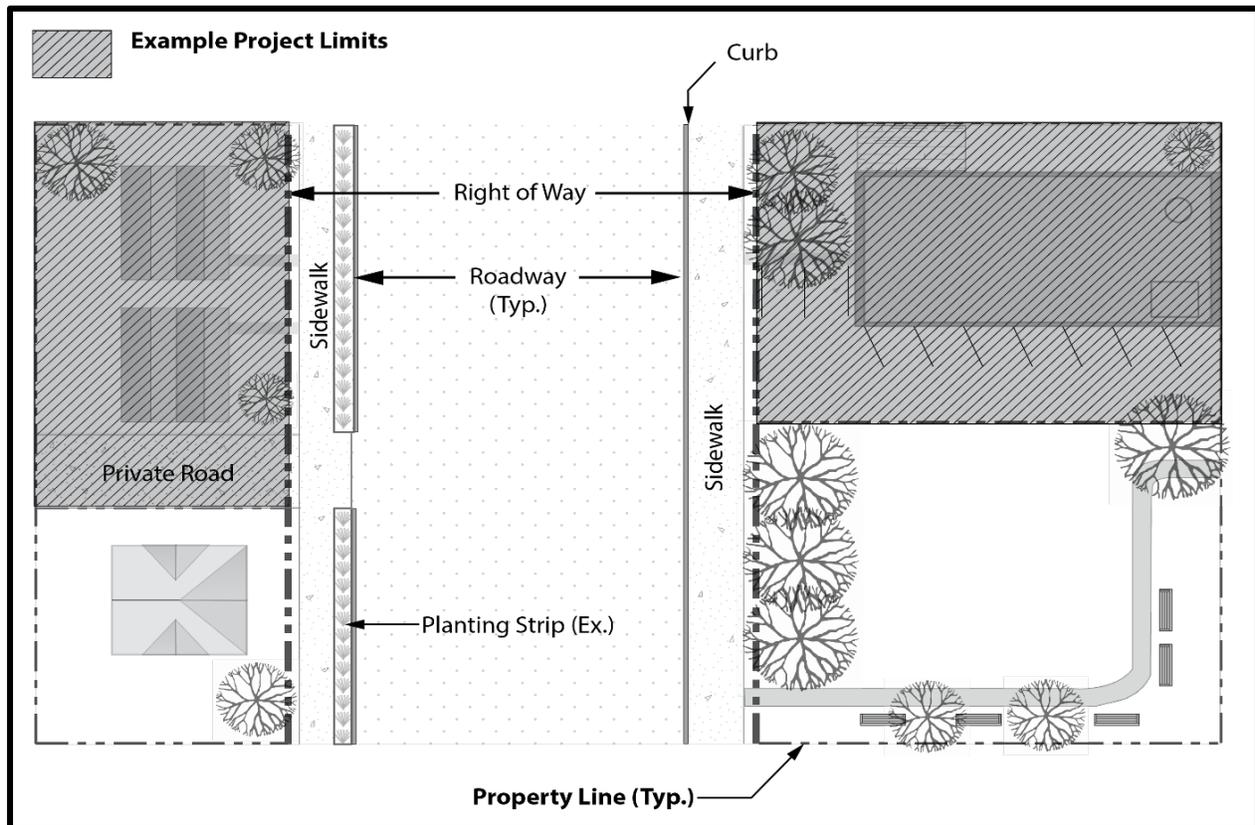


Figure 2.5. Parcel-based Project Site Definition.

6. For the purposes of this Manual, a **utility project** (land-disturbing activity not required to comply with requirements as stated in SMC, Section 22.800.040.A.2) includes maintenance, repair, or installation of underground or overhead utility facilities, such as, but not limited to, pipes, conduits, and vaults, and that includes replacing the ground surface with in-kind material or materials with similar runoff characteristics.
7. For the purposes of this Manual, a **pavement maintenance project** (land-disturbing activity not required to comply with requirements as stated in SMC, Section 22.800.040.A.2) is limited to the following maintenance activities:
- Pothole and square cut patching
  - Overlaying existing asphalt, concrete, or brick pavement with asphalt or concrete without expanding the area of coverage
  - Shoulder grading
  - Reshaping or regrading drainage ditches
  - Crack sealing
  - Vegetation maintenance

8. For the purposes of this Manual, a **Washington State Department of Transportation (WSDOT) project** (which shall manage stormwater as stated in SMC, Section 22.800.040.A.6) includes WSDOT roadway projects within state rights-of-way under WSDOT control within the jurisdiction of the City.
9. **Special circumstances projects** do not closely fit a defined project type and require a case-by-case review (refer to *Section 4.8*).

## 2.3. Step 3 – Identify the Receiving Water and Downstream Conveyance

For minimum requirement purposes, runoff leaving the project site is classified based on the type of receiving water and system into which the project site discharges. The project proponent shall determine the receiving water or point of discharge for the stormwater runoff from the project site (e.g., wetland, lake, creek, salt water, or combined sewer).

The minimum requirements vary considerably by type of receiving water and downstream conveyance; therefore, it is very important to determine and specify the receiving water and type of downstream conveyance. An overview of the types of receiving waters and systems in Seattle is provided below:

- Wetlands: designated under SMC, Section 25.09.020
- Creek Basins: include stream basins throughout Seattle (Figures 2.6 and 2.7), generally referred to as “creek basins.” Discharges are to the creek or the associated drainage basin (example: SMC, Section 22.805.050.C.2).
- Public Combined Sewer: a publicly owned and maintained system that carries drainage water and wastewater to a publicly owned treatment works (SMC, Section 22.801.170) (Figure 2.8). Discharges are to the public combined sewer or its associated basin.
- Small Lake Basins: in Seattle these include Bitter Lake, Green Lake, and Haller Lake (Figures 2.6 and 2.7). Discharges are to the small lake or the associated drainage basin.
- Designated Receiving Waters: includes the Duwamish River, Puget Sound, Lake Washington, Lake Union, Elliott Bay, Portage Bay, Union Bay, the Lake Washington Ship Canal, and other receiving waters determined by the Director of Seattle Public Utilities (SPU) and approved by Ecology as having sufficient capacity to receive drainage discharges (Figures 2.9 and 2.10). Discharges are to the designated receiving water or its associated drainage basin.

Capacity constraints in any downstream conveyance can modify the flow control requirements for discharges:

- A Capacity-constrained System is a drainage system or a public combined sewer that the Director of SPU has determined to have inadequate capacity to carry existing and anticipated loads, or a drainage system that includes ditches and culverts. Discharges are to the capacity-constrained system or its associated basin.

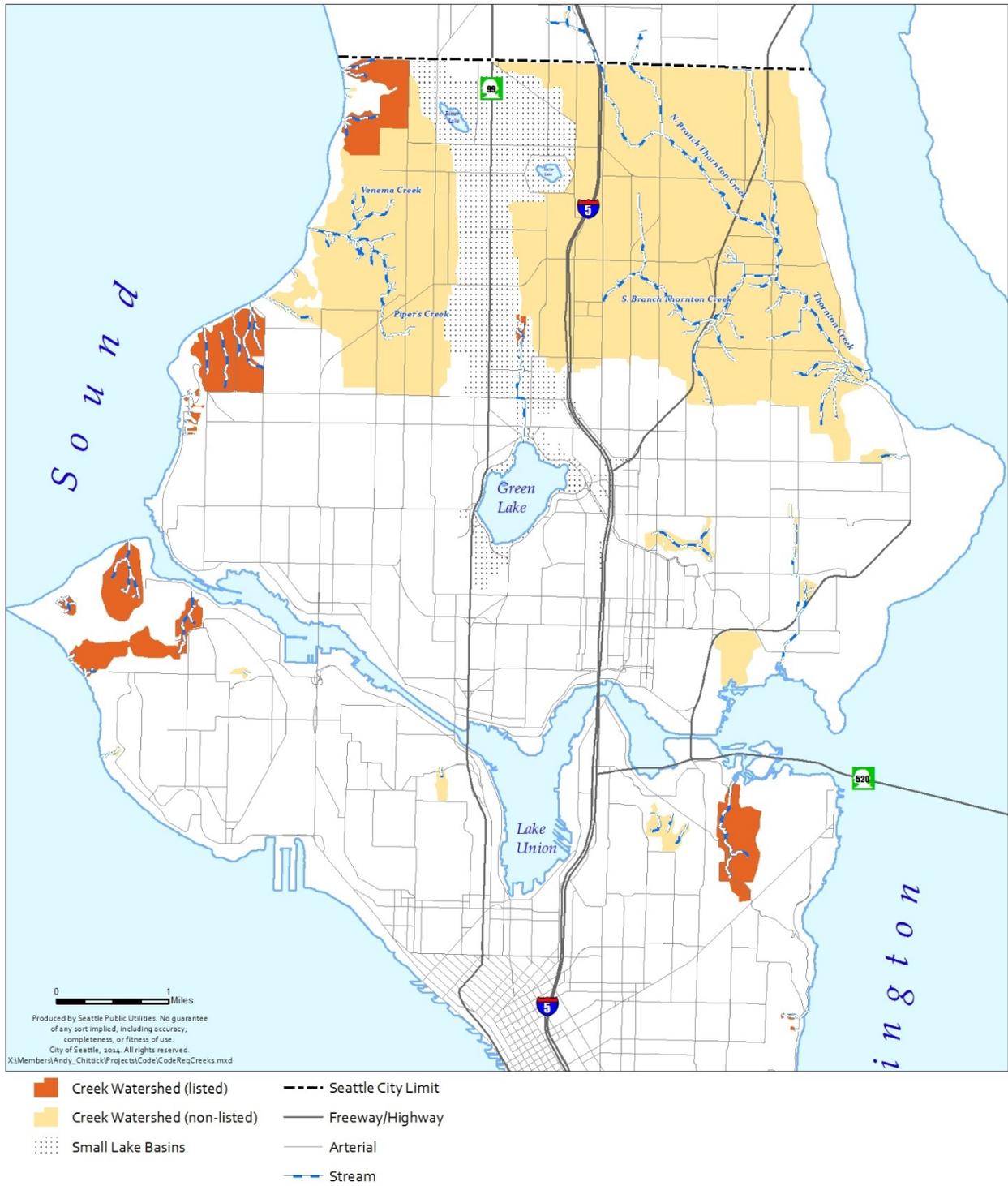


Figure 2.6. North End Creek and Small Lake Basins.

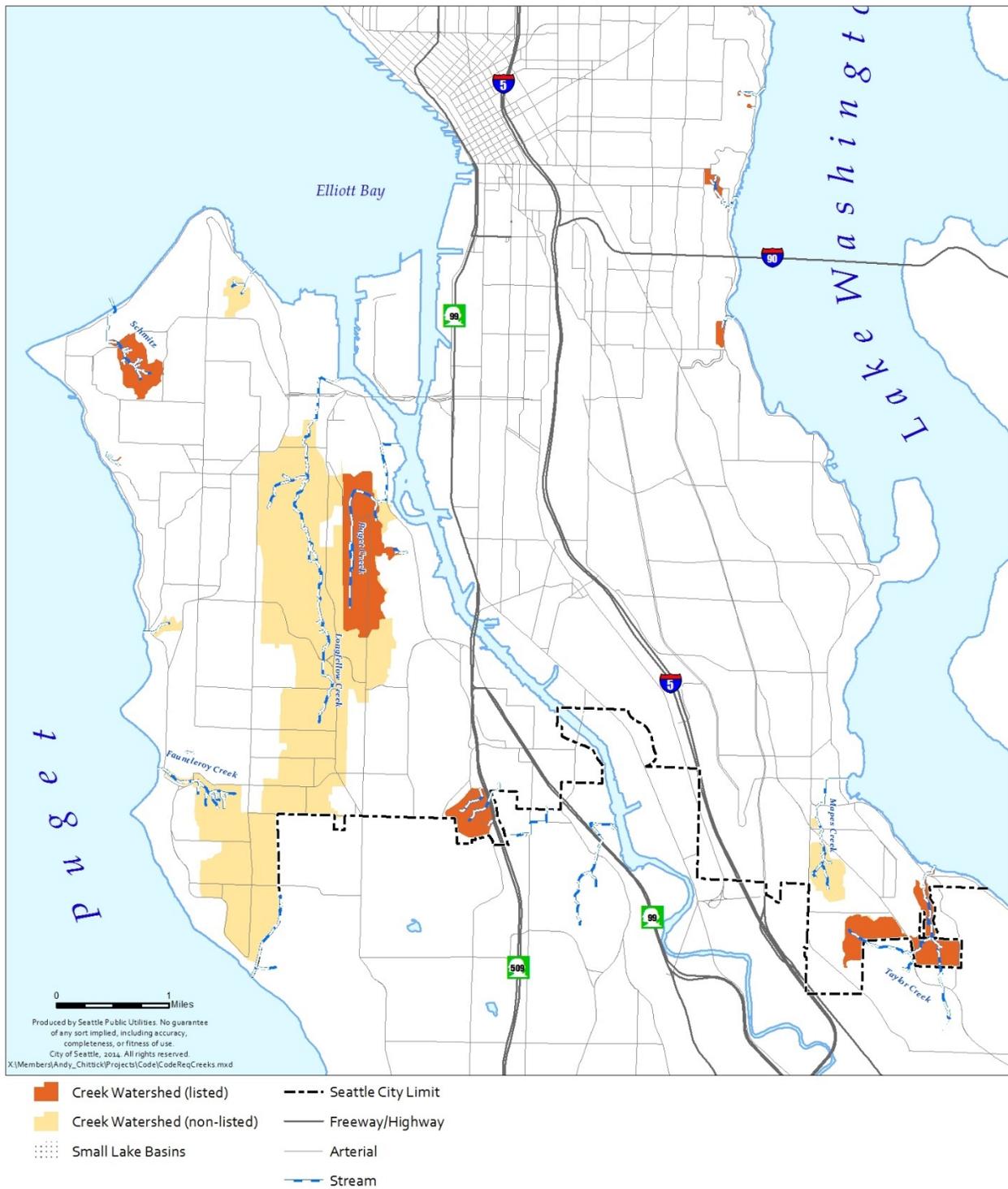


Figure 2.7. South End Creek and Small Lake Basins.

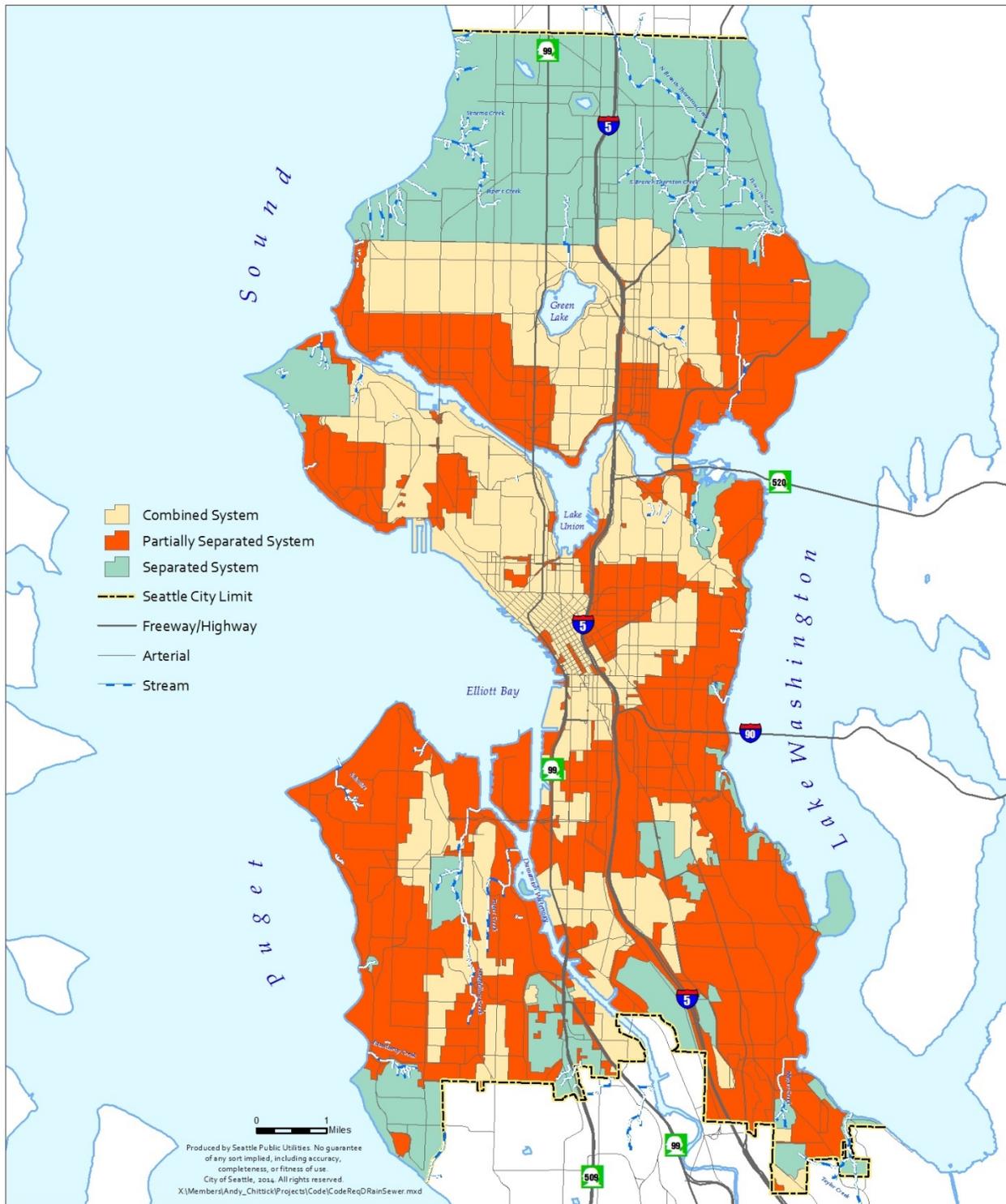


Figure 2.8. Public Combined Sewer Basins.

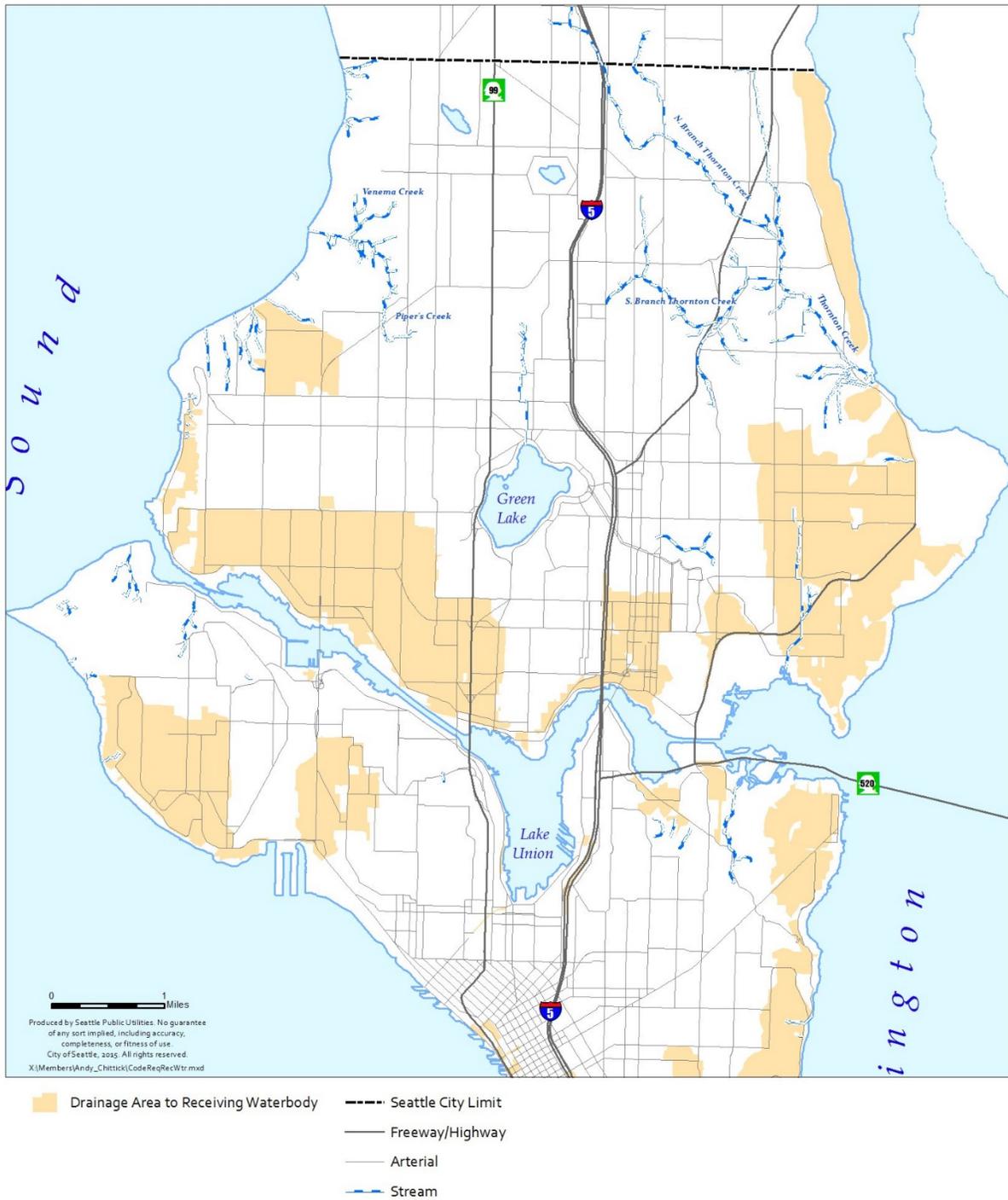


Figure 2.9. North End Designated Receiving Water Drainage Areas.

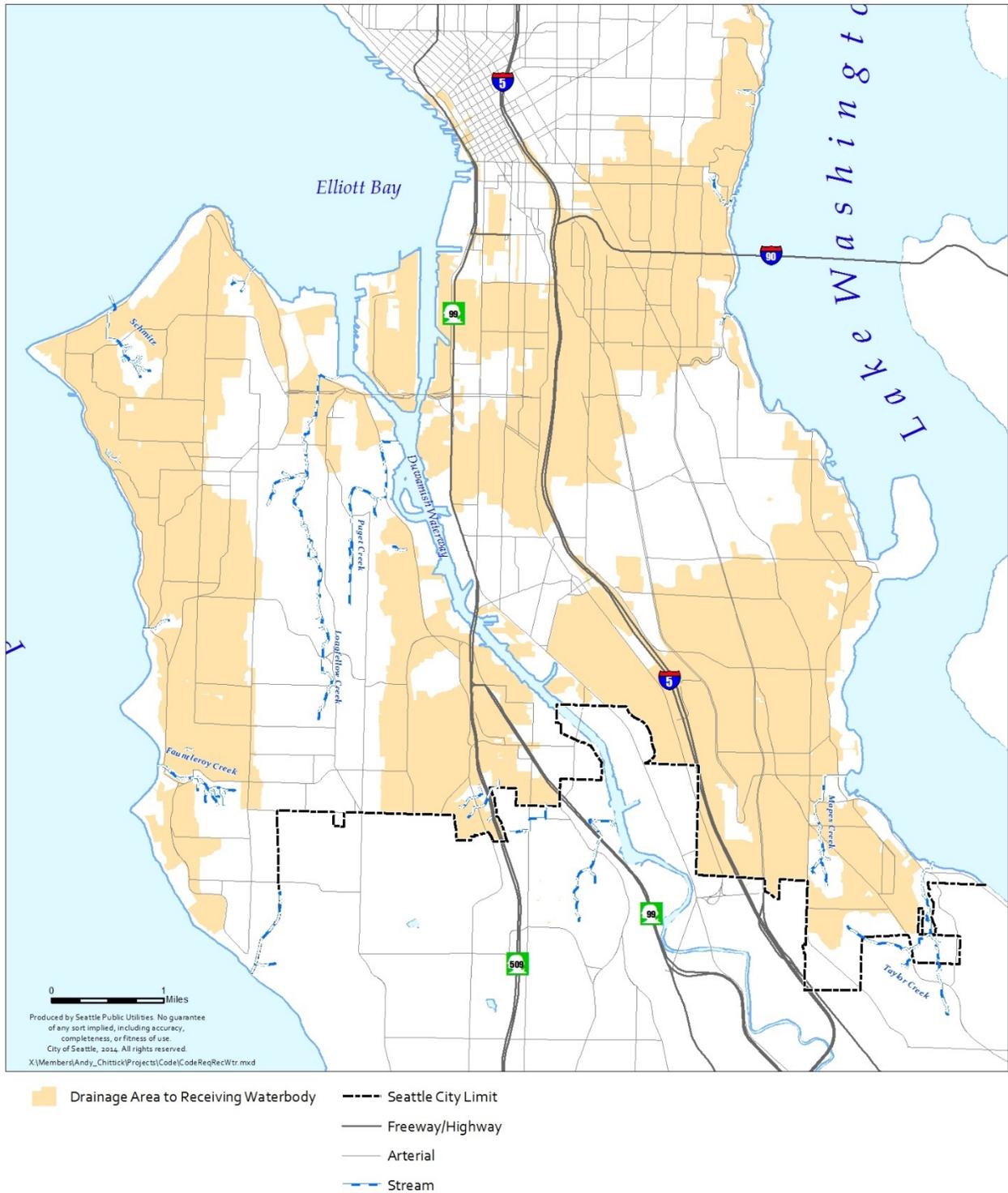


Figure 2.10. South End Designated Receiving Water Drainage Areas.

## 2.4. Step 4 – Perform Site Assessment and Planning

After the applicable minimum requirements have been identified, each project shall evaluate project design considerations and perform a site assessment as outlined in *Chapter 7*. The goal of the site assessment and planning step is to identify any additional issues that shall be addressed in association with stormwater management requirements. This step shall be completed before selecting on-site stormwater management, flow control, and/or treatment BMPs.

Site-specific factors to consider may include, but are not limited to:

- Site boundaries and structures
- Soil conditions and infiltration capacity
- Critical area issues (e.g., flood plains, landslide prone areas, and site contamination)
- Groundwater elevations

Project proponents need to evaluate all the applicable code requirements and conduct a full site assessment to characterize site opportunities and constraints before choosing and designing stormwater strategies (refer to *Chapter 7*). Once the site conditions are known and the applicable minimum requirements have been identified, proceed to *Volume 3, Chapters 3, 4, and 5* to begin the BMP selection and design process.

## 2.5. Step 5– Calculate New Plus Replaced Hard Surface and Native Vegetation Conversion

The thresholds triggering specific Minimum Requirements for Flow Control are based on the amount of the project's new plus replaced hard surface and converted native vegetation.

Note that open, uncovered retention or detention facilities shall not be considered as impervious surfaces for the purposes of determining whether the minimum requirement thresholds are exceeded. However, these facilities shall be considered impervious surfaces for the purposes of stormwater facility sizing. Permeable pavement, vegetated roof systems, and areas with underdrains (e.g., playfields, athletic fields, rail yards) shall be considered as impervious surfaces for the purposes of determining whether the minimum requirement thresholds are exceeded. Refer to SMC, Section 22.801 and *Appendix A* for detailed definitions of these key terms.

The amount of native vegetation that is removed and replaced with lawn, landscaping, and pasture groundcover shall also be calculated.

New plus replaced hard surface areas and converted native vegetation shall be quantified separately for work within, and outside, the right-of-way.

## 2.6. Step 6 – Calculate New Plus Replaced Pollution Generating Surface

The thresholds triggering specific Minimum Requirements for Treatment are based on the total amount of the project's new plus replaced PGHS and new plus replaced pollution-generating pervious surface (PGPS). PGHS and PGPS include areas that are considered to be a significant source of pollutants in stormwater runoff. Examples of pollution-generating surfaces include areas subject to vehicular use (including permeable pavement); certain industrial activities; outdoor storage of erodible or leachable materials, wastes, or chemicals; lawns, landscaping areas, golf courses, parks, cemeteries, and sports fields (natural and artificial turf). Metal roofs are also considered to be a pollution-generating surface unless coated with an inert, non-leachable material (e.g., baked-on enamel coating). Refer to SMC, Section 22.801 and *Appendix A* for detailed definitions of these key terms.

New plus replaced PGHS and PGPS shall be quantified separately for work within and outside the right-of-way.

## 2.7. Step 7 – Determine Which Minimum Requirements Apply

An overview of the minimum requirements applicable to all project types is included in *Chapter 3*. In addition, an overview of the minimum requirements specific to each project type is included in *Chapter 4*.

Based on the information obtained from Step 1 through Step 6, the applicable minimum requirements for specific project types can be determined for:

- Soil amendment (*Section 5.1*)
- On-site stormwater management (*Section 5.2*)
- Flow control (*Section 5.3*)
- Water quality treatment (*Section 5.4*)

# CHAPTER 3 – MINIMUM REQUIREMENTS FOR ALL PROJECTS

All projects are required to comply with the minimum requirements listed in SMC, Section 22.805, even when drainage control review is not required. The specifics of the minimum requirements applicable to all projects, as per SMC, Section 22.805.020 are summarized in the following subsections.

Excerpts from the Stormwater Code (in *italics*) are presented below in the first column in each section. The second column in each section provides applicable references for further information on how to meet the requirement. Note that this section summarizes but does not replace or alter Stormwater Code requirements.

## 3.1. Maintaining Natural Drainage Patterns

Stormwater Code Language	References
<p><i>SMC 22.805.020.A – For all projects, natural drainage patterns shall be maintained and discharges shall occur at the natural location to the maximum extent feasible and consistent with subsection 22.805.020.B. Drainage shall be controlled to avoid any adverse impact to receiving waters or down-gradient properties. Drainage water retained on the site shall not have any adverse impact to up-gradient properties.</i></p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• <i>Volume 1, Section 3.2 (SMC, Section 22.805.020.B) – Minimum Requirements for Discharge Point</i></li> <li>• <i>Volume 3, Section 3.3 – BMP Selection for On-site Stormwater Management</i></li> <li>• <i>Volume 3, Section 3.4 – BMP Selection for Flow Control</i></li> </ul>

## 3.2. Discharge Point

Stormwater Code Language	References
<p><i>SMC 22.805.020. B – The point of discharge for drainage water from each site shall be selected using criteria that shall include, but not be limited to, preservation of natural drainage patterns and whether the capacity of the drainage system is adequate for the flow rate and volume. For those projects meeting the minimum standards, the proposed point of discharge shall be identified in the drainage control plan required by this subtitle, for review and approval or disapproval by the Director.</i></p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• <i>Volume 3, Section 4.3.2 – Approved Point of Discharge</i></li> </ul>

### 3.3. Flood-prone Areas

Stormwater Code Language	References
<p><i>SMC 22.805.020.C – On sites within flood prone areas, responsible parties are required to employ procedures to minimize the potential for flooding on the site and to minimize the potential for the project to increase the risk of flooding. The procedures shall include those set forth in other titles of the Seattle Municipal Code and rules promulgated thereunder, including, but not limited to, Chapter 23.60 (Shoreline Master Program), Chapter 25.06 (Floodplain Development) and Chapter 25.09 (Environmentally Critical Areas) of the Seattle Municipal Code.</i></p> <p><b>Final code language to be added to final manual</b></p>	<ul style="list-style-type: none"> <li>• SMC, Chapter 23.60 – Shoreline Master Program</li> <li>• SMC, Chapter 25.06 – Floodplain Development</li> <li>• SMC, Chapter 25.09 – Environmentally Critical Areas</li> </ul>

### 3.4. Construction Site Stormwater Pollution Prevention Control

There are 19 elements required for construction site stormwater pollution prevention control (SMC, Section 22.805.020.D). These 19 elements include:

1. Mark Clearing Limits and Environmentally Critical Areas
2. Retain Top Layer
3. Establish Construction Access
4. Protect Downstream Properties and Receiving Waters
5. Prevent Erosion and Sediment Transport from the Site
6. Prevent Erosion and Sediment Transport from the Site by Vehicles
7. Stabilize Soils
8. Protect Slopes
9. Protect Storm Drains
10. Stabilize Channels and Outlets
11. Control Pollutants
12. Control Dewatering
13. Maintain BMPs
14. Inspect BMPs
15. Execute Construction Stormwater and Erosion Control Plan
16. Minimize Open Trenches
17. Phase the Project
18. Install Flow Control and Water Quality Facilities
19. Protect Stormwater BMPs

Stormwater Code Language	References
<p>SMC 22.805.020.D – Temporary and permanent construction controls shall be used to accomplish [the 19 construction site stormwater pollution prevention control requirements outlined in SMC 22.805.020.D and the 19 Construction Site Stormwater Pollution Prevention Requirements]. It is not applicable. Additional controls may be required by the Director when minimum controls are not sufficient to prevent erosion or transport of sediment or other pollutants from the site.</p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• Volume 2, Chapter 3 – Selecting Construction Stormwater Controls</li> <li>• SMC, Section 22.805.020.D – Minimum Requirements for Construction Site Stormwater Pollution Prevention Control</li> </ul>

### 3.5. Protect Wetlands

Stormwater Code Language	References
<p>SMC 22.805.020.E- All projects discharging into a wetland or its buffer, either directly or indirectly through a conveyance system, shall prevent sediment, silt, and other pollutants from entering the wetland or values.</p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• SMC, Chapter 25.09 – Environmentally Critical Areas</li> <li>• Guide sheets 1 through 3 in the SWMMWW Volume I, Appendix I-D (Ecology 2014)</li> </ul>

### 3.6. Protect Streams and Creeks

Stormwater Code Language	References
<p>SMC 22.805.020.F- All projects, including projects discharging directly to a stream or creek or to a drainage system that discharges to a stream or creek, shall maintain the water quality in any affected stream or creek by selecting, designing, installing, and maintaining temporary and permanent controls.</p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• None provided</li> </ul>

### 3.7. Protect Shorelines

Stormwater Code Language	References
<p>SMC 22.805.020.G – All projects discharging directly or indirectly through a drainage system into a stream or creek shall select, design, install, and maintain controls to prevent stormwater impacts on the quality and stormwater quantity that would result in a net loss of riparian habitat as defined in WAC 173-26-020(11).</p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• SMC, Chapter 23.60 – Shoreline Master Program</li> <li>• WAC, Section 173-26-020(11) – Definitions – “Document of Record”</li> </ul>

### 3.8. Ensure Sufficient Capacity

Stormwater Code Language	References
<p><i>SMC 22.805.020.H – All large projects, all projects with an excavation depth of 12 feet or more below the existing grade, and all projects with an excavation depth of less than 12 feet located in an area expected to have shallow groundwater depths shall ensure that sufficient capacity exists in the public drainage system and public combined sewer to carry existing and anticipated loads, including any flows from dewatering activities.</i></p> <p><i>Capacity analysis shall extend to at least 1/4-mile from the point of discharge to the receiving facility or improve the drainage system or public combined sewer to a minimum depth of 12 feet. Unless approved otherwise by the Director as necessary to meet the purposes of this subtitle:</i></p> <ol style="list-style-type: none"> <li><i>1. Capacity analysis for discharges to the public drainage system shall be based on peak flows with a 4 percent annual probability (25-year recurrence interval); and</i></li> <li><i>2. Capacity analysis for discharges to the public combined sewer shall be based on peak flows with a 20 percent annual probability (5-year recurrence interval).</i></li> </ol>	<ul style="list-style-type: none"> <li>• <b>Volume 3, Section 4.3 – Conveyance General Design Requirements</b></li> <li>• <b>Appendix F – Hydrologic Analysis and Design</b></li> <li>• <b>CAM 1180 – Design Guidelines for Public Storm Drain Facilities</b></li> </ul>

### 3.9. Install Source Control BMPs

Stormwater Code Language	References
<p><i>SMC 22.805.020.I – Source control BMPs shall be installed for specific pollution-generating activities as specified in the joint SPU/DPD Directors’ Rule, “Volume 4 – Source Control,” to the extent necessary to prevent prohibited discharges as described in Section 22.802.020, and to prevent contaminants from coming in contact with drainage water. This requirement applies to the pollution-generating activities that are stationary or occur in one primary location and to the portion of the site being developed. Examples of installed source controls include, but are not be limited to, the following:</i></p> <ol style="list-style-type: none"> <li><i>1. A roof, awning, or cover erected over the pollution-generating activity;</i></li> <li><i>2. Ground surface treatment of the pollution-generating activity area to prevent interaction with, or breakdown of, materials used in conjunction with the pollution-generating activity;</i></li> <li><i>3. Containment of drainage from the pollution-generating activity to a closed sump or tank. Contents of such a sump or tank must be pumped or hauled by a waste handler, or treated prior to discharge to a public drainage system.</i></li> <li><i>4. Construct a berm or dike to enclose or contain the pollution-generating activities;</i></li> <li><i>5. Direct drainage from containment area of pollution-generating activity to a closed sump or tank for settling and appropriate disposal, or treat prior to discharging to a public drainage system;</i></li> <li><i>6. Pave, treat, or cover the containment area of pollution-generating activities with materials that will not interact with or break down in the presence of other materials used in conjunction with the pollution-generating activity; and</i></li> <li><i>7. Prevent precipitation from flowing or being blown onto containment areas of pollution-generating activities.</i></li> </ol>	<ul style="list-style-type: none"> <li>• <b>Volume 4 – Source Control</b></li> </ul>

### 3.10. Do Not Obstruct Watercourses

Stormwater Code Language	References
<p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>SMC, Chapter 22.808 – Stormwater Code Enforcement</li> </ul>

### 3.11. Comply with Side Sewer Code

A side sewer permit is required for any repair, replacement or alteration of the sewer or drainage system. Any change to the point of discharge must be approved. A change of use that introduces contaminants or process water to the drainage system, public combined sewer, or public sanitary sewer must also be approved and may require pretreatment. For information on side sewer permits, contact the Department of Planning and Development (DPD) Drainage and Sewer Review Desk, at (206) 684-5362 or [sidesewerinfo@seattle.gov](mailto:sidesewerinfo@seattle.gov). For information on King County discharge requirements, contact the Industrial Waste Program at (206) 477-5300 or [Info.KCIW@kingcounty.gov](mailto:Info.KCIW@kingcounty.gov).

Stormwater Code Language	References
<p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>SMC, Chapter 21.16 – Side Sewer Code</li> <li>SMC, Chapter 22.808 – Stormwater Code Enforcement</li> <li>Volume 5 – Enforcement</li> </ul>

### 3.12. Maintenance and Inspection

Projects that construct on-site stormwater management, flow control, and water quality treatment BMPs shall comply with the maintenance and inspection requirements specified in SMC, Section 22.807.090.

Stormwater Code Language	References
<p><i>SMC 22.807.090 -</i></p> <p><i>A. The owner and other responsible party shall maintain drainage control facilities, source controls, and other facilities required by this subtitle and by rules adopted hereunder to keep these facilities in good working order. The responsible party shall inspect permanent drainage control facilities, temporary drainage control facilities, and other temporary best management practices or facilities on a schedule consistent with this subtitle and sufficient for the facilities to function at design capacity. The Director may require the responsible party to conduct more frequent inspections and/or maintenance when necessary to ensure functioning at design capacity. The owner(s) shall inform future purchasers and other successors and assignees to the property of the existence of the drainage control facilities and the elements of the drainage control plan, the limitations of the drainage control facilities, and the requirements for continued inspection and maintenance of the drainage control facilities.</i></p> <p><i>B. Inspection by City. The Director of SPU may establish inspection programs to evaluate and, when required, enforce compliance with the requirements of this subtitle and accomplishment of its purposes. Inspection programs may be established on any reasonable basis, including but not limited to: routine inspections; random inspections; inspections based upon complaints or other notice of possible violations; inspection of drainage basins or areas identified as higher than typical sources of sediment or other contaminants or pollutants; inspections of businesses or industries of a type associated with higher than usual discharges of contaminants or pollutants or with discharges of a type which are more likely than the typical discharge to cause violations of state or federal water or sediment quality standards or the City's NPDES stormwater permit; and joint inspections with other agencies inspecting under environmental or safety laws. Inspections may include, but are not limited to: reviewing maintenance and repair records; sampling discharges, surface water, groundwater, and material or water in drainage control facilities; and evaluating the condition of drainage control facilities and other best management practices.</i></p>	<ul style="list-style-type: none"> <li>• <i>Appendix G – Stormwater Control Operations and Maintenance Requirements</i></li> </ul>

## CHAPTER 4 – MINIMUM REQUIREMENTS BASED ON PROJECT TYPE

In addition to the minimum requirements for all projects presented in *Chapter 3*, additional requirements apply based upon project type and are summarized in this chapter. Project types are defined in *Chapter 2, Step 2*. Excerpts from the Stormwater Code (in italics) are presented in the first column in each section. The second column in each section provides applicable references. Flow charts are included in the roadway and parcel-based project sections (*Sections 4.3 and 4.4*) to summarize the key minimum requirements. Utility and pavement maintenance project types are exempt from certain minimum requirements (refer to *Sections 4.5 and 4.6* for additional information). This chapter also includes a short section on WSDOT projects (*Sections 4.7*) and special circumstances (*Sections 4.8*), applicable when a project does not fit into the other project type categories.

The key minimum requirements include the following:

- Soil Amendment
- On-site Stormwater Management
- Wetland Protection Standard
- Pre-developed Forested Standard
- Pre-developed Pasture Standard
- Peak Control Standard
- Basic Treatment
- Oil Treatment
- Phosphorus Treatment
- Enhanced Treatment

The standards are described in more detail in *Chapter 5*. For each project type, the minimum requirements are a function of the following factors (refer to *Chapter 2*):

- The receiving water and/or type of downstream conveyance
- The amount of new plus replaced hard surface (Note: permeable pavement, vegetated roof systems, and areas with underdrains count toward determining this threshold.)
- The amount of converted native vegetation
- The amount of new plus replaced pollution-generating hard surface (PGHS)
- The amount of new plus replaced pollution-generating pervious surface (PGPS)

## 4.1. Single-family Residential Projects

The applicable code language and references for single-family residential projects are summarized below. Note that single-family residential projects are not required to install flow control or water quality treatment BMPs since the project type, by definition, does not trigger the minimum requirements for flow control or water quality treatment.

Stormwater Code Language	References
<p><i>SMC 22.805.030 –</i></p> <p><i>B. On-site Stormwater Management. Single-family residential projects shall meet the Minimum Requirements for On-site Stormwater Management contained in Section 22.805.070, to the extent allowed by law, if:</i></p> <p><i>1. The project is a subdivision, as defined in the code, that is altered, or otherwise amended by a plat or other lawful document recorded with the County Recorder on or after January 1, 2016, and where that document either created the lot or reduced the size of the lot, either the total new plus replaced hard surface is 750 square feet or more or land disturbing activity is 7,000 square feet or more; or</i></p> <p><i>2. For any other project, either the total new plus replaced hard surface is 1,500 square feet or the land disturbing activity is 7,000 square feet or more.</i></p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• <i>Volume 1, Section 5.1 (SMC, Section 22.805.030)– Soil Amendment</i></li> <li>• <i>Volume 1, Section 5.2 (SMC, Section 22.805.070)– On-site Stormwater Management</i></li> <li>• <i>Volume 3, Section 3.3 – BMP Selection for On-Site Stormwater Management</i></li> </ul>

## 4.2. Trail and Sidewalk Projects

The applicable code language and references for trail and sidewalk projects are summarized below.

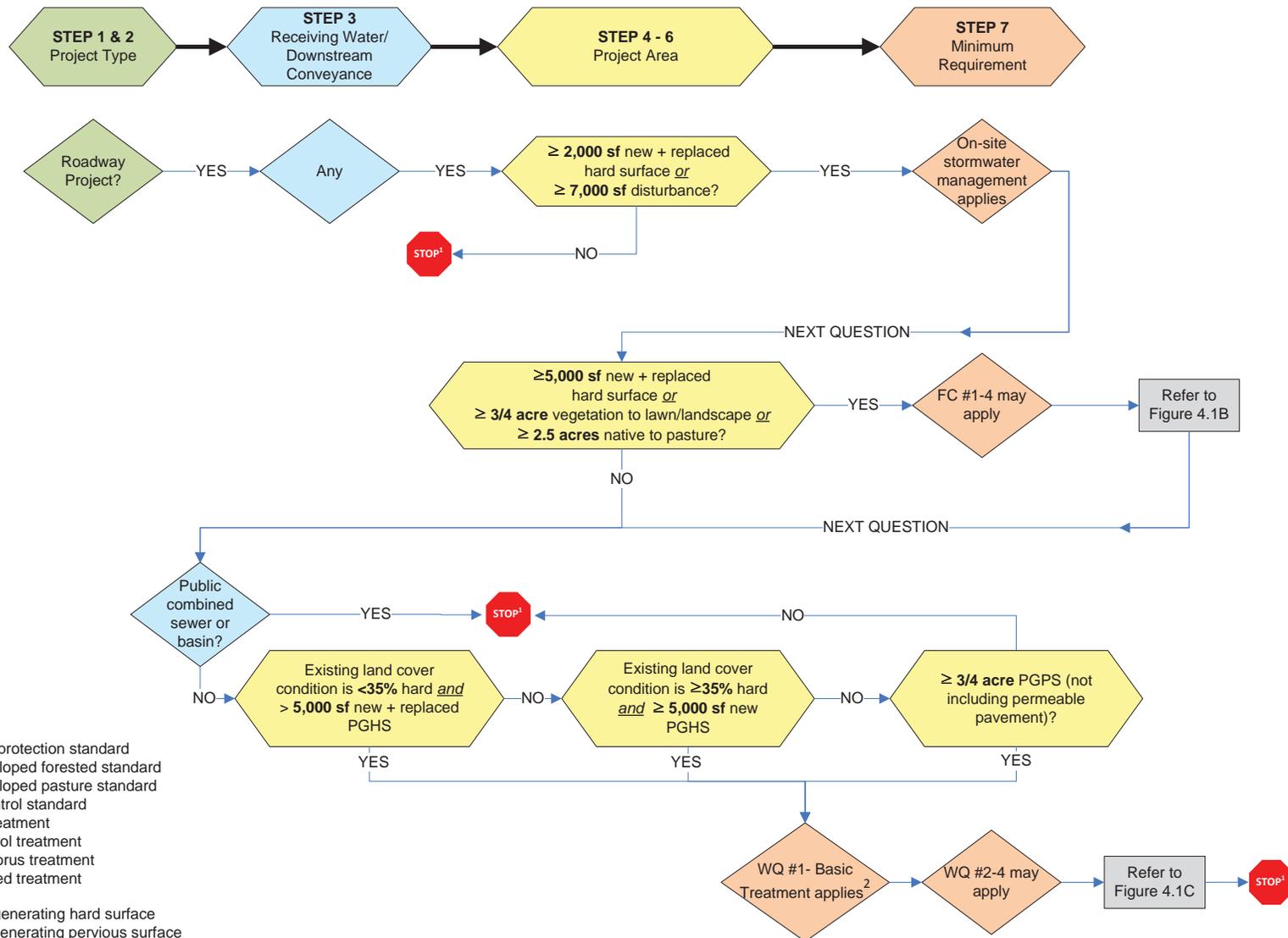
Stormwater Code Language	References
<p>SMC 22.805.040 –</p> <p>A. On-site Stormwater Management: All trail and sidewalk projects with 2,000 square feet or more of new plus replaced impervious surface shall meet the requirements for On-site Stormwater Management contained in Section 22.805.070, to the extent allowed by law.</p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• Volume 1, Section 5.1 (SMC, Section 22.805.040)– Soil Amendment</li> <li>• Volume 1, Section 5.2 (SMC, Section 22.805.070)– On-site Stormwater Management</li> <li>• Volume 3, Section 3.3– BMP Selection for On-Site Stormwater Management</li> </ul>

### 4.3. Roadway Projects

Roadway projects shall meet the minimum requirements for soil amendment (SMC, Section 22.805.060.A), on-site stormwater management (SMC, Section 22.805.020.F, flow control (SMC, Section 22.805.080) and water quality treatment (SMC, Section 22.805.090) when applicable. Key minimum requirements for roadway projects are summarized in Figures 4.1a through 4.1c. This section provides a summary of the following requirements for roadway projects:

<b>Receiving Water/ Downstream Conveyance</b>	<b>Potentially Applicable Standard(s)</b>	<b>Reference</b>
All	Soil amendment	<i>Section 4.3.1</i>
All	On-site stormwater management	<i>Section 4.3.2</i>
Wetland*	Wetland protection	<i>Section 4.3.3.1</i>
Listed creek basin*	Pre-developed forested Pre-developed pasture	<i>Section 4.3.3.2</i>
Non-listed creek basin*	Pre-developed forested Pre-developed pasture	<i>Section 4.3.3.3</i>
Small lake basins	Peak control	<i>Section 4.3.3.4</i>
Public combined sewer	Peak control	<i>Section 4.3.3.5</i>
Capacity-constrained basin	Peak control	<i>Section 4.3.3.6</i>
Groundwater discharge to public drainage system or public combined sewer	Peak control	<i>Section 4.3.3.7</i>
All, except public combined sewer	Water quality treatment	<i>Section 4.3.4</i>

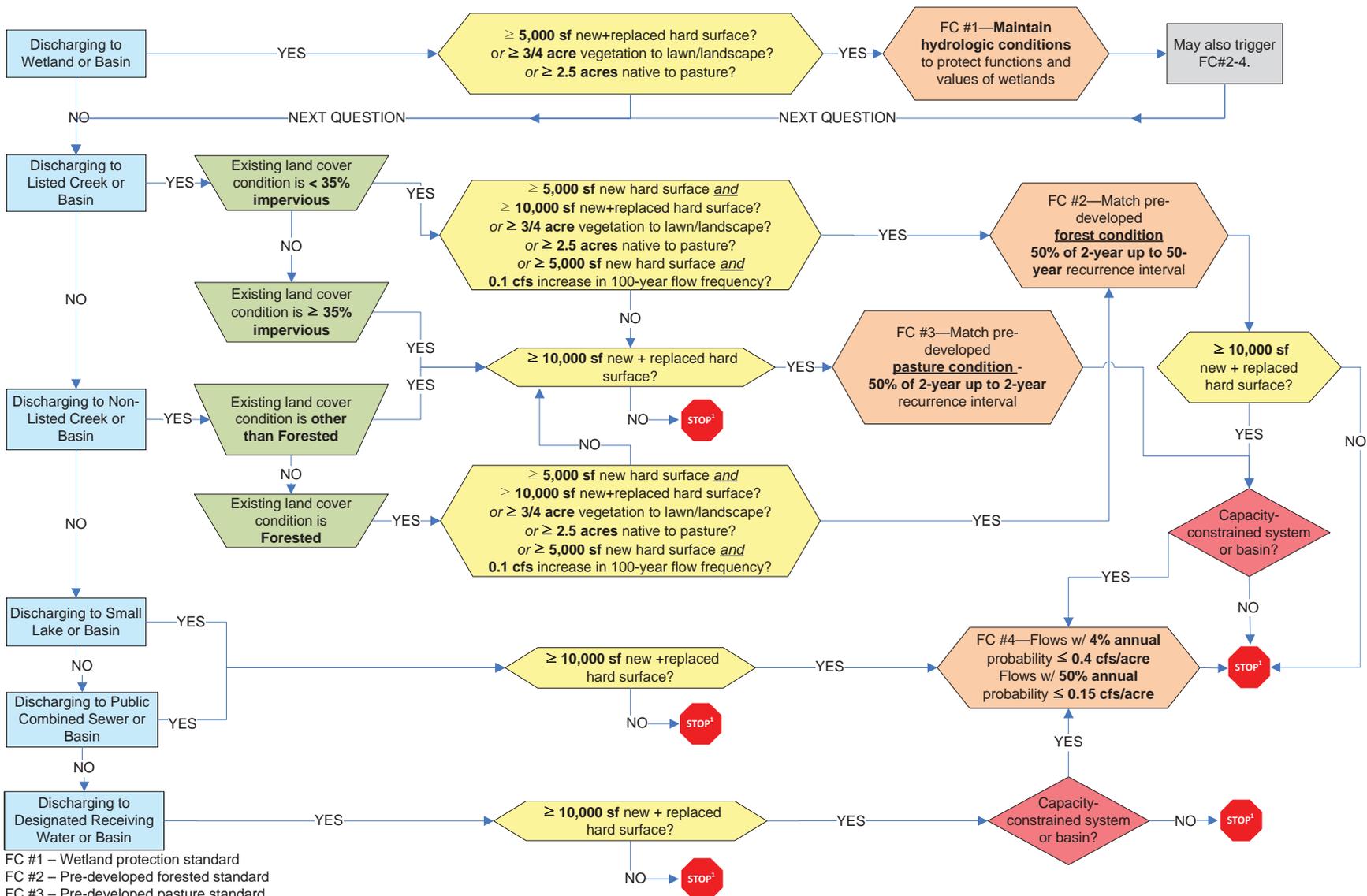
\* Note: In addition to meeting a forested, pasture, or wetland protection standard, projects discharging to a capacity-constrained system will also be required to meet the peak control standard.



FC #1 – Wetland protection standard  
 FC #2 – Pre-developed forested standard  
 FC #3 – Pre-developed pasture standard  
 FC #4 – Peak control standard  
 WQ #1 – Basic treatment  
 WQ #2 – Oil control treatment  
 WQ #3 – Phosphorus treatment  
 WQ #4 – Enhanced treatment  
 sf- square feet  
 PGHS- pollution generating hard surface  
 PGPS- pollution generating pervious surface

1- Evaluate applicability of soil amendment requirement (refer to Chapter 5), requirements for discharges from groundwater (refer to Chapter 4), and minimum requirements for all projects (refer to Chapter 3).  
 2- Evaluate if water quality treatment requirements apply to all PGHS or only to new PGHS (refer to SMC 22.805.060.D2.)

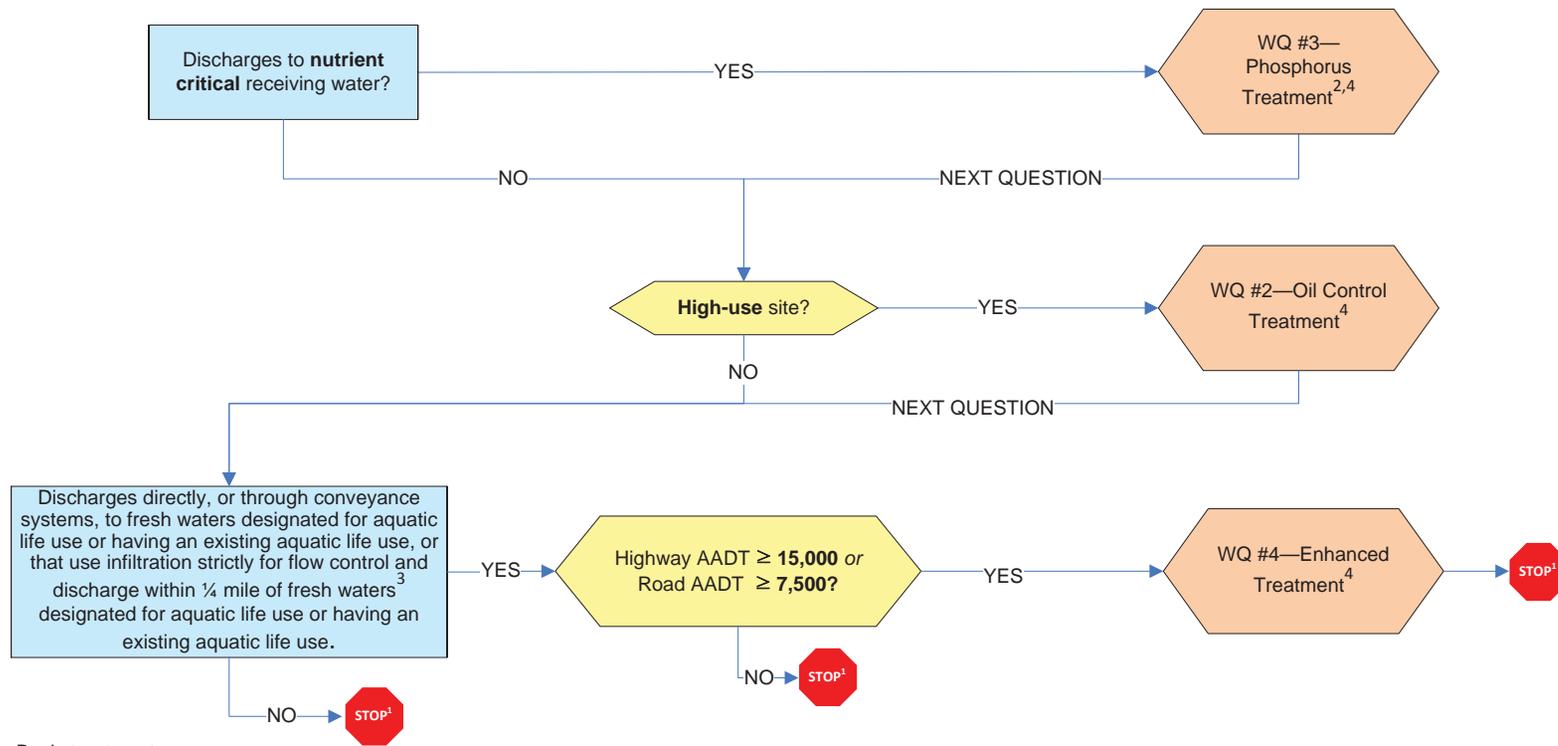
**Figure 4.1A. Project Minimum Requirement Overview Flow Chart for Roadway Projects.**



FC #1 – Wetland protection standard  
 FC #2 – Pre-developed forested standard  
 FC #3 – Pre-developed pasture standard  
 FC #4 – Peak control standard  
 sf- square feet  
 PGHS- pollution generating hard surface  
 PGPS- pollution generating pervious surface

1- Evaluate applicability of soil amendment requirement (refer to Chapter 5), requirements for discharges from groundwater (refer to Chapter 4), and minimum requirements for all projects (refer to Chapter 3).

**Figure 4.1B Flow Control Minimum Requirements for Roadway Projects.**



WQ #1 – Basic treatment  
 WQ #2 – Oil control treatment  
 WQ #3 – Phosphorus treatment  
 WQ #4 – Enhanced treatment  
 PGHS- pollution generating hard surface  
 PGPS- pollution generating pervious surface  
 AADT- Annual Average Daily Traffic

- 1- Evaluate applicability of soil amendment requirement (refer to Chapter 5), requirements for discharges from groundwater (refer to Chapter 4), and minimum requirements for all projects (refer to Chapter 3).
- 2- At the time this Stormwater Manual was developed, there were no established phosphorus-specific treatment requirements for project-scale treatment BMPs in Seattle. Refer to the DPD website to determine if any nutrient-critical treatment criteria apply ([www.seattle.gov/dpd/codesrules/codes/stormwater/default.htm](http://www.seattle.gov/dpd/codesrules/codes/stormwater/default.htm))
- 3- As provided in Chapter 173-201A WAC, all surface waters of the state, including but not limited to wetlands, in or near the City are to be protected for designated aquatic life use. For the purposes of the Stormwater Code and this Manual, at minimum, the following water bodies are designated for aquatic life use: small lakes, creeks, and freshwater designated receiving waters.
- 4- Evaluate if water quality treatment requirements apply to all PGHS or only to new PGHS (refer to SMC 22.805.060.D2.)

**Figure 4.1C. Water Quality Treatment Minimum Requirements for Roadway Projects**

### 4.3.1. Soil Amendment

Stormwater Code Language	References
<p>SMC 22.805.060.A – Retain and protect undisturbed soil in areas not replaced, and disturbed topsoil (including construction lay-down areas) with organic matter to ensure full compliance with the rules promulgated by the Director.</p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• Volume 1, Section 5.1 (SMC, Section 22.805.060)– Soil Amendment</li> </ul>

### 4.3.2. On-site Stormwater Management

Stormwater Code Language	References
<p>SMC 22.805.060.B – All roadway projects with 2,000 square feet or more of new plus replaced impervious surface or 7,000 square feet or more of Stormwater Management contained in Section 22.805.070, to the extent allowed by law.</p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• Volume 1, Section 5.2 (SMC, Section 22.805.070)– On-site Stormwater Management</li> <li>• Volume 3, Section 3.3 – BMP Selection for On-site Stormwater Management</li> </ul>

### 4.3.3. Flow Control

#### 4.3.3.1. Roadway Projects Discharging to Wetlands – Flow Control

Stormwater Code Language	References
<p>SMC 22.805.060.C.1 – Roadway projects discharging into a wetland shall comply with subsection 22.805.080.B.1 (Wetland Protection Standard) if:</p> <p><i>Final code language to be added to final manual</i></p> <p>b. The project converts 5,000 square feet or more of vegetation to lawn or landscaped areas and from which there is a surface discharge into a natural or man-made conveyance system from the site; or</p> <p>c. The project converts 2.5 acres or more of vegetation to pasture and from which there is a surface discharge into a natural or man-made conveyance system from the site.</p>	<ul style="list-style-type: none"> <li>• SMC, Section 22.805.080.B.1 – Wetland Protection Standard</li> <li>• Volume 1, Section 3.5 – Protect Wetlands</li> <li>• Guide sheets 1 through 3 in the SWMMWW Volume I, Appendix I-D (Ecology 2014)</li> </ul>

#### 4.3.3.2. Roadway Projects Discharging to Listed Creek Basins – Flow Control

Stormwater Code Language	References
<p>SMC 22.805.060.B.2 – Roadway projects discharging into Blue Ridge Creek, Broadview Creek, Discovery Park Creek, Durham Creek, Frink Creek, Golden Gardens Creek, Kiwanis Ravine/Wolfe Creek, Licton Creek, or Washington Creek shall comply with subsection 22.805.080.B.2 (Pre-developed Forested Standard) if the existing impervious coverage is less than 35 percent and one or more of the following apply:</p> <p><i>Final code language to be added to final manual</i></p> <p>a. Comply with subsection 22.805.080.B.2 (Pre-developed Forested Standard) if the existing impervious coverage is less than 35 percent and one or more of the following apply:</p>	<ul style="list-style-type: none"> <li>• SMC, Section 22.805.080.B.2 – Pre-developed Forested Standard</li> <li>• SMC, Section 22.805.080.B.3 – Pre-developed Pasture Standard</li> <li>• Figure 2.6 – North End Creek and Small Lake Basins</li> <li>• Figure 2.7 – South End Creek and Small Lake Basins</li> </ul>

Stormwater Code Language	References
<p>1. The project adds 5,000 square feet or more of new impervious surface and the total new plus replaced impervious surface is 10,000 square feet or more; or</p> <p>2. The project converts 3/4 acres or more of vegetation to lawn or landscaped areas and from which there is a surface discharge into a natural or man-made conveyance system from the site; or</p> <p>3. The project converts 2.5 acres or more of vegetation to natural or managed pasture and from which there is a surface discharge into a natural or man-made conveyance system from the site; or</p> <p>4. The project adds 5,000 square feet or more of new impervious surface and, through a combination of effective impervious surfaces and converted pervious surfaces, causes a 0.1 cubic feet per second increase in the 100-year recurrence interval flow frequency as estimated using a continuous model approved by the Director.</p> <p>b. Comply with subsection 22.805.080.B.3 (Pre-developed Pasture Standard) if the criteria in subsection 22.805.060.B.2.a do not apply and the total new plus replaced impervious surface is 10,000 square feet or more.</p>	<ul style="list-style-type: none"> <li>• Volume 3, Section 3.4 – BMP Selection for Flow Control</li> <li>• Volume 3, Section 4.1 – Sizing Approach</li> </ul>

Final code language to be added to final manual

**4.3.3.3. Roadway Projects Discharging to Non-listed Creek Basins – Flow Control**

Stormwater Code Language	References
<p>SMC 22.805.060.B.3 – Roadway projects discharging into a creek not listed in subsection 22.805.060.B.2 shall:</p> <p>a. Comply with subsection 22.805.080.B.2 (Pre-developed Forested Standard) if the existing land cover is forested and one or more of the following apply:</p> <p>1. The project adds 5,000 square feet or more of new impervious surface and the total new plus replaced impervious surface is 10,000 square feet or more; or</p> <p>2. The project converts 3/4 acres or more of vegetation to lawn or landscaped areas and from which there is a surface discharge into a natural or man-made conveyance system from the site; or</p> <p>3. The project converts 2.5 acres or more of vegetation to pasture and from which there is a surface discharge into a natural or man-made conveyance system from the site; or</p> <p>4. The project adds 5,000 square feet or more of new impervious surface and, through a combination of effective impervious surfaces and converted pervious surfaces, causes a 0.1 cubic feet per second increase in the 100-year recurrence interval flow frequency as estimated using a continuous model approved by the Director.</p> <p>b. Comply with subsection 22.805.080.B.3 (Pre-developed Pasture Standard) if the criteria in subsection 22.805.060.B.3.a do not apply and the total new plus replaced impervious surface is 10,000 square feet or more.</p>	<ul style="list-style-type: none"> <li>• SMC, Section 22.805.080.B.2 – Pre-developed Forested Standard</li> <li>• SMC, Section 22.805.080.B.3 – Pre-developed Pasture Standard</li> <li>• Figure 2.6 – North End Creek and Small Lake Basins</li> <li>• Figure 2.7 – South End Creek and Small Lake Basins</li> <li>• Volume 3, Section 3.4 – BMP Selection for Flow Control</li> <li>• Volume 3, Section 4.1 – Sizing Approach</li> </ul>

Final code language to be added to final manual

#### 4.3.3.4. Roadway Projects Discharging to Small Lake Basins – Flow Control

Stormwater Code Language	References
<p><i>SMC 22.805.060.B.4 – Projects discharging into Bitter Lake, Green Lake, or Haller Lake drainage basins shall comply with subsection 22.805.080.B.4 (Peak Control Standard) if the total new plus replaced impervious surface is 10,000 square feet or more.</i></p> <p><b>Final code language to be added to final manual</b></p>	<ul style="list-style-type: none"> <li>• SMC, Section 22.805.080.B.4 – Peak Control Standard</li> <li>• Figure 2.6 – North End Creek and Small Lake Basins</li> <li>• Figure 2.7 – South End Creek and Small Lake Basins</li> <li>• <i>Volume 3, Section 3.4</i> – BMP Selection for Flow Control</li> <li>• <i>Volume 3, Section 4.1</i> – Sizing Approach</li> </ul>

#### 4.3.3.5. Roadway Projects Discharging to Public Combined Sewer – Flow Control

At the time this Manual was developed, there was one public combined sewer basin that was determined to have sufficient capacity to carry existing and anticipated loads. Roadway projects are not required to provide peak flow control in this basin. Refer to the DPD website to determine which basins are included in this category ([www.seattle.gov/dpd/codesrules/codes/stormwater](http://www.seattle.gov/dpd/codesrules/codes/stormwater)).

Stormwater Code Language	References
<p><i>SMC 22.805.060.B.5 – Unless the Director of SPU determines the public combined sewer has sufficient capacity to carry existing and anticipated loads, roadway projects discharging into the public combined sewer shall comply with subsection 22.805.080.B.4 (Peak Control Standard) if the total new plus replaced impervious surface is 10,000 square feet or more.</i></p> <p><b>Final code language to be added to final manual</b></p>	<ul style="list-style-type: none"> <li>• SMC, Section 22.805.080.B.4 – Peak Control Standard</li> <li>• Figure 2.8 – Public Combined Sewer Basins</li> <li>• <i>Volume 3, Section 3.4</i> – BMP Selection for Flow Control</li> <li>• <i>Volume 3, Section 4.1</i> – Sizing Approach</li> </ul>

#### 4.3.3.6. Roadway Projects Discharging to a Capacity-constrained System – Flow Control

Stormwater Code Language	References
<p><i>SMC 22.805.060.B.6 – In addition to applicable minimum requirements for flow control in subsection 22.805.060.B.1 through subsection 22.805.060.B.5, roadway projects discharging into a capacity-constrained system shall also comply with subsection 22.805.080.B.4 (Peak Control Standard) if the total new plus replaced impervious surface is 10,000 square feet or more.</i></p> <p><b>Final code language to be added to final manual</b></p> <p><i>SMC 22.801.040 – If a project plans a drainage system or a public combined sewer that the Director of SPU has determined to have inadequate capacity to carry drainage water, a public drainage system to which groundwater is permanently discharged, and the informal drainage system (including ditches and culverts).</i></p>	<ul style="list-style-type: none"> <li>• SMC, Section 22.805.060.B.1 – Discharges to Wetlands</li> <li>• SMC, Section 22.805.060.B.2 – Discharges to Listed Creek Basins</li> <li>• SMC, Section 22.805.060.B.3 – Discharges to Non-listed Creek Basins</li> <li>• SMC, Section 22.805.060.B.4 – Discharges to Small Lake Basins</li> <li>• SMC, Section 22.805.060.B.5 – Discharges to Public Combined Sewer</li> <li>• SMC, Section 22.805.080.B.4 – Peak Control Standard</li> <li>• <i>Volume 3, Section 3.4</i> – BMP Selection for Flow Control</li> <li>• <i>Volume 3, Section 4.1</i> – Sizing Approach</li> </ul>

**4.3.3.7. Roadway Projects Discharging Groundwater – Flow Control**

Stormwater Code Language	References
<p>SMC 22.805.060.C.7 – Roadway projects that will permanently discharge groundwater to a public drainage system or to a public combined sewer (Standard) if the total new plus replaced hard surface is 10,000 square feet or more.</p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• SMC, Section 22.805.060.C.7– Discharges from Groundwater</li> </ul>

**4.3.4. Water Quality Treatment**

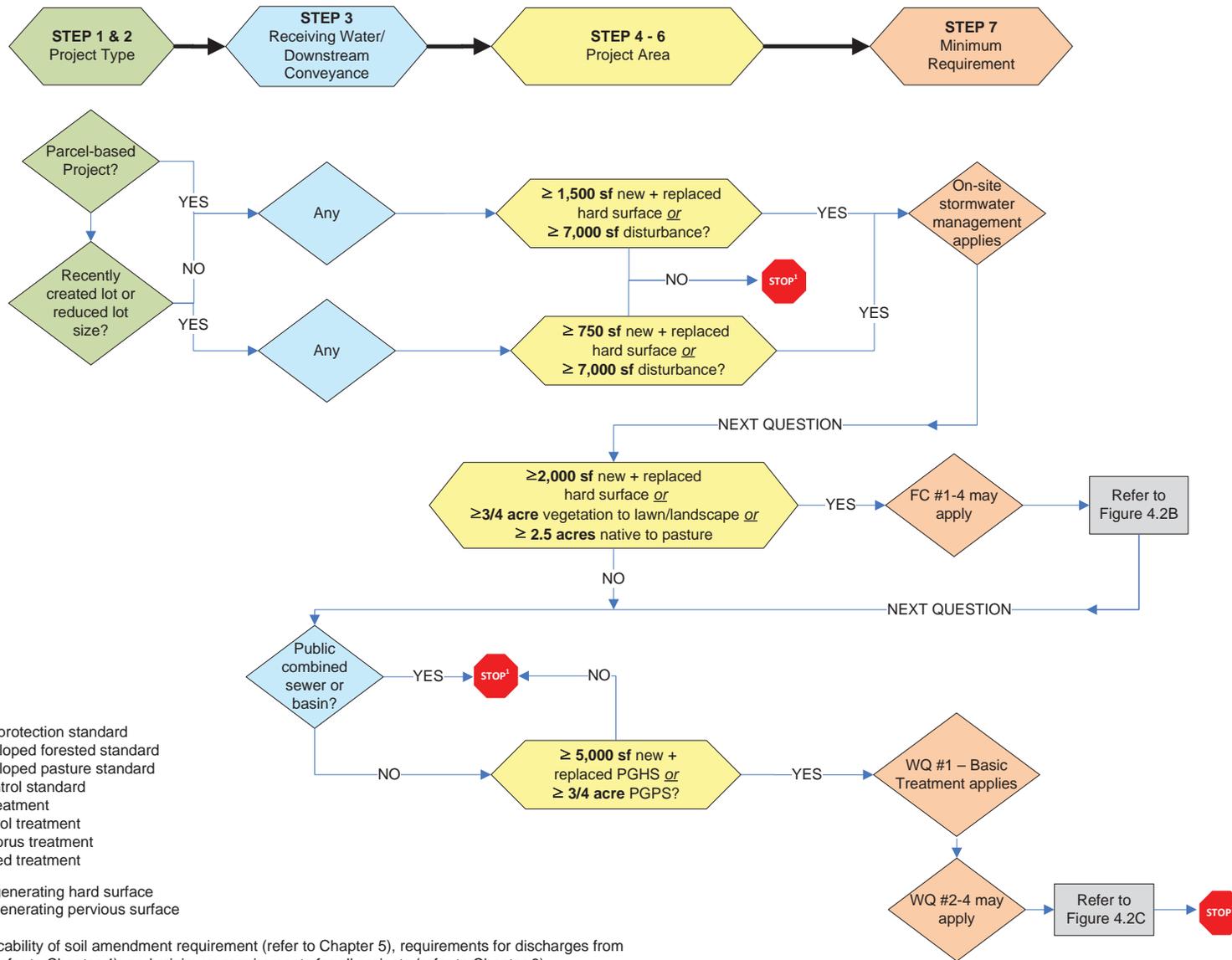
Stormwater Code Language	References
<p>SMC 22.805.060.C – Roadway projects not discharging to the public combined sewer shall comply with the minimum requirements for treatment contained in Section 22.805.090, to the extent allowed by law, if:</p> <p><i>Final code language to be added to final manual</i></p> <ol style="list-style-type: none"> <li>1. The total new plus replaced pollution-generating impervious surface is 10,000 square feet or more; or</li> <li>2. The total new pollution-generating impervious surface is 5,000 square feet or more and results in a 50% or more expansion of the existing impervious surfaces within the project site; or</li> <li>3. The total new plus replaced pollution-generating pervious surfaces is three-quarters of an acre or more and from which there is a surface discharge in a natural or man-made conveyance system from the site.</li> </ol>	<ul style="list-style-type: none"> <li>• SMC, Section 22.805.090 – Minimum Requirements for Treatment</li> <li>• Volume 3, Section 3.5 – BMP Selection for Water Quality Treatment</li> <li>• Volume 3, Section 4.1 – Sizing Approach</li> </ul>

## 4.4. Parcel-based Projects

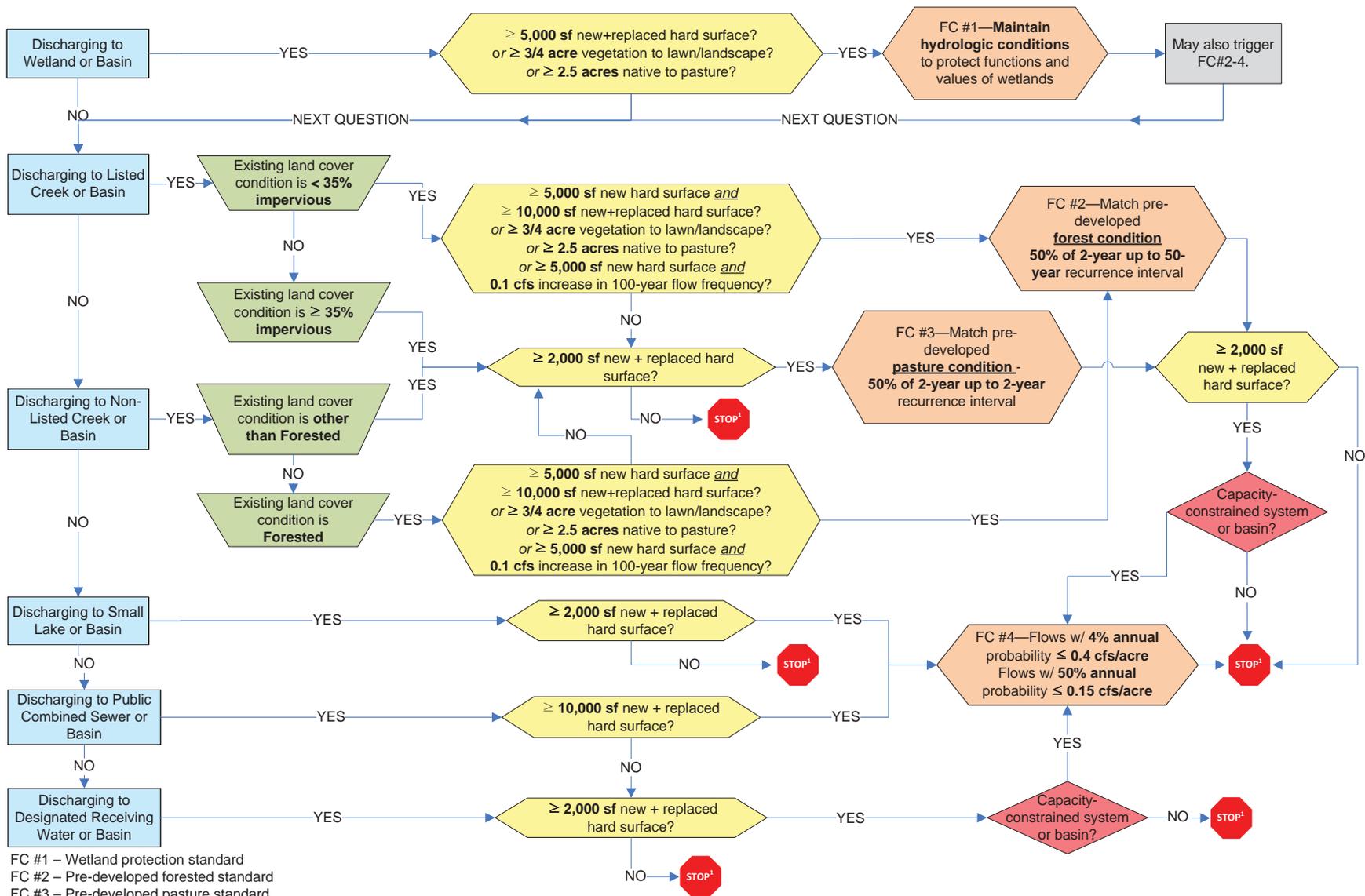
Parcel-based projects shall meet the minimum requirements for soil amendment (SMC, Section 22.805.050.A), on-site stormwater management (SMC, Section 22.805.070), flow control (SMC, Section 22.805.080) and water quality treatment (SMC, Section 22.805.090), when applicable. Key minimum requirements for parcel-based projects are summarized in Figures 4.2a through 4.2c. This section provides a summary of the following requirements for parcel-based projects.

<b>Receiving Water/ Downstream Conveyance</b>	<b>Potentially Applicable Standard(s)</b>	<b>Reference</b>
All	Soil amendment	<i>Section 4.4.1</i>
All	On-site stormwater management	<i>Section 4.4.2</i>
Wetland*	Wetland protection	<i>Section 4.4.3.1</i>
Listed creek basin*	Pre-developed forested Pre-developed pasture	<i>Section 4.4.3.2</i>
Non-listed creek basin*	Pre-developed forested Pre-developed pasture	<i>Section 4.4.3.3</i>
Small lake basins	Peak control	<i>Section 4.4.3.4</i>
Public combined sewer	Peak control	<i>Section 4.4.3.5</i>
Capacity-constrained system	Peak control	<i>Section 4.4.3.6</i>
Groundwater discharge to public drainage system or public combined sewer	Peak control	<i>Section 4.4.3.7</i>
All, except public combined sewer	Water quality treatment	<i>Section 4.4.4</i>

\* Note: In addition to meeting a forested, pasture, or wetland protection standard, projects discharging to a capacity-constrained system will also be required to meet the peak control standard.



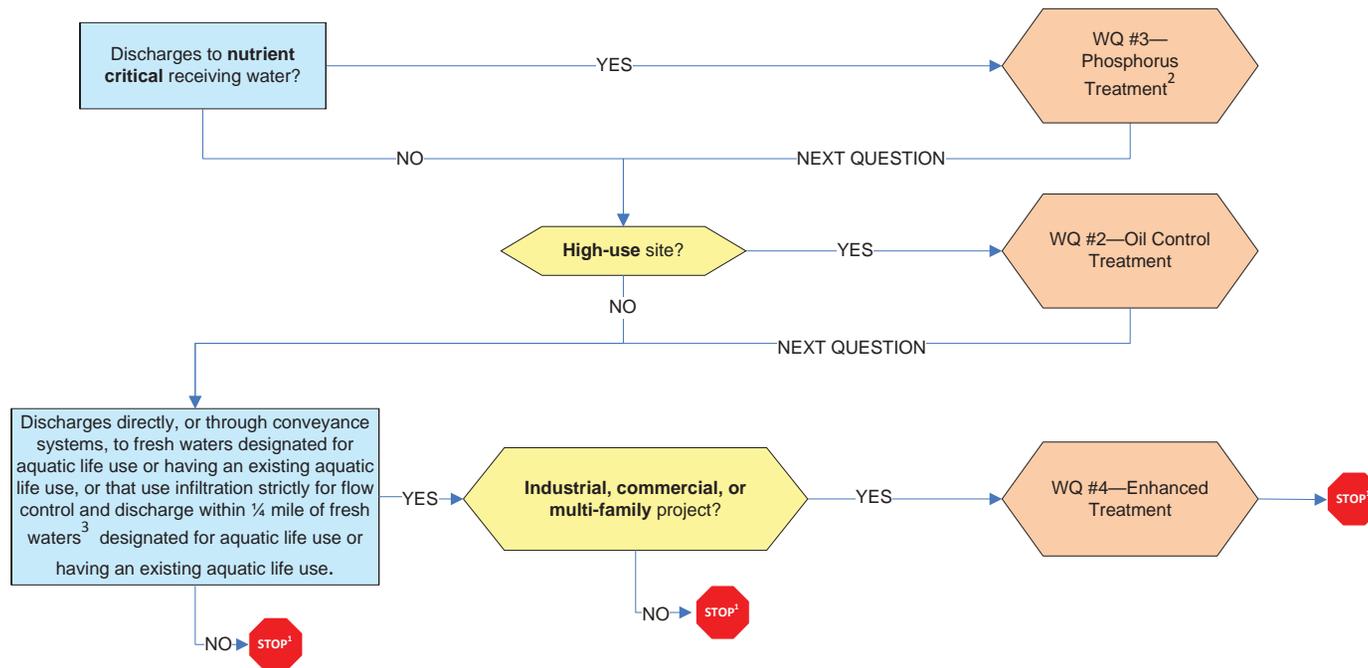
**Figure 4.2A. Project Minimum Requirement Overview Flow Chart for Parcel-Based Projects.**



FC #1 – Wetland protection standard  
 FC #2 – Pre-developed forested standard  
 FC #3 – Pre-developed pasture standard  
 FC #4 – Peak control standard  
 sf- square feet  
 PGHS- pollution generating hard surface  
 PGPS- pollution generating pervious surface

1- Evaluate applicability of soil amendment requirement (refer to Chapter 5), requirements for discharges from groundwater (refer to Chapter 4), and minimum requirements for all projects (refer to Chapter 3).

**Figure 4.2B. Flow Control Minimum Requirements for Parcel-Based Projects.**



WQ #1 – Basic treatment

WQ #2 – Oil control treatment

WQ #3 – Phosphorus treatment

WQ #4 – Enhanced treatment

sf- square feet

PGHS- pollution generating hard surface

PGPS- pollution generating pervious surface

- 1- Evaluate applicability of soil amendment requirement (refer to Chapter 5), requirements for discharges from groundwater (refer to Chapter 4), and minimum requirements for all projects (refer to Chapter 3).
- 2- At the time this Stormwater Manual was developed, there were no established phosphorus-specific treatment requirements for project-scale treatment BMPs in Seattle. Refer to the DPD website to determine if any nutrient-critical treatment criteria apply ([www.seattle.gov/dpd/codesrules/codes/stormwater/default.htm](http://www.seattle.gov/dpd/codesrules/codes/stormwater/default.htm)).
- 3- As provided in Chapter 173-201A WAC, all surface waters of the state, including but not limited to wetlands, in or near the City are to be protected for designated aquatic life use. For the purposes of the Stormwater Code and this Manual, at minimum, the following water bodies are designated for aquatic life use: small lakes, creeks, and freshwater designated receiving waters.

**Figure 4.2C. Water Quality Treatment Minimum Requirements for Parcel-Based Projects.**

### 4.4.1. Soil Amendment

Stormwater Code Language	References
<p>SMC 22.805.050.A – Retain and protect undisturbed soil in areas not replaced, and disturbed topsoil (including construction lay-down areas) with organic matter in compliance with the rules promulgated by the Director.</p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>Volume 1, Section 5.1 (SMC, Section 22.805.050) – Soil Amendment</li> </ul>

### 4.4.2. On-site Stormwater Management

Stormwater Code Language	References
<p>SMC 22.805.050 –</p> <p>B. On-site Stormwater Management. Parcel-based projects shall meet the Minimum Requirements for On-site Stormwater Management contained in Section 22.805.070, to the extent allowed by law, if:</p> <p>1. For a project on a lot most recently created, adjusted, or subdivided by a recorded document on or after January 1, 2016, and where that document either created the lot or reduced the size of the lot, either the total new plus replaced hard surface is 750 square feet or more or land disturbing activity is 7,000 square feet or more; or</p> <p>2. For any other project, either the total new plus replaced hard surface is 1,500 square feet or more or the land disturbing activity is 7,000 square feet or more.</p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>Volume 1, Section 5.2 (SMC, Section 22.805.070) – On-site Stormwater Management</li> <li>Volume 3, Section 3.3 – BMP Selection for On-site Stormwater Management</li> </ul>

### 4.4.3. Flow Control

#### 4.4.3.1. Parcel-based Projects Discharging to Wetlands – Flow Control

Stormwater Code Language	References
<p>SMC 22.805.050.B.1 – Parcel-based projects discharging into a wetland shall comply with subsection 22.805.080.B.1 (Wetland Protection Standard) if:</p> <p>a. The total new plus replaced impervious surface is 5,000 square feet or more;</p> <p>b. The project converts 2.5 acres or more of vegetation to lawn or landscaped area and from which there is a surface discharge into a natural or man-made conveyance system from the site; or</p> <p>c. The project converts 2.5 acres or more of vegetation to pasture and from which there is a surface discharge into a natural or man-made conveyance system from the site.</p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>Volume 1, Section 5.3.1 (SMC, Section 22.805.080.B.1) – Wetland Protection Standard</li> <li>Volume 1, Section 2.6 – Protect Wetlands</li> <li>Guide sheets 1 through 3 in the SWMMWW Volume I, Appendix I-D (Ecology 2014)</li> </ul>

**4.4.3.2. Parcel-based Projects Discharging to Listed Creek Basins – Flow Control**

Stormwater Code Language	References
<p>SMC 22.805.050.B.2 – Parcel-based projects discharging into Blue Ridge Creek, Broadview Creek, Discovery Park Creek, Durham Creek, Frink Creek, Golden Gardens Creek, Kiwanis Ravine/Wolfe Creek, Licton Springs Creek, Madrona Park Creek, Mee Kwa-Mooks Creek, Mount Baker Park Creek, Puget Creek, Riverview Creek, Schmitz Creek, Taylor Creek, or Washington Park Creek shall:</p> <p><i>Final code language to be added to final manual</i></p> <p>Forested Standard, if the existing impervious coverage is less than 35 percent. The following apply:</p> <ol style="list-style-type: none"> <li>1. The project adds 5,000 square feet or more of new impervious surface and the total new plus replaced impervious surface is 10,000 square feet or more; or</li> <li>2. The project converts 3/4 acres or more of vegetation to lawn or landscaped areas and from which there is a surface discharge into a natural or man-made conveyance system from the site; or</li> <li>3. The project converts 2.5 acres or more of vegetation to pasture and from which there is a surface discharge into a natural or man-made conveyance system from the site; or</li> <li>4. The project adds 5,000 square feet or more of new impervious surface and, through a combination of effective impervious surfaces and converted pervious surfaces, causes a 0.1 cubic feet per second increase in the 100-year recurrence interval flow frequency as estimated using a continuous model approved by the Director.</li> </ol> <p>b. Comply with subsection 22.805.080.B.3 (Pre-developed Pasture Standard) if the criteria in subsection 22.805.050.B.2.a {above} do not apply and the total new plus replaced impervious surface is 2,000 square feet or more.</p>	<ul style="list-style-type: none"> <li>• Volume 1, Section 5.3.2 (SMC, Section 22.805.080.B.2) – Pre-developed Forested Standard</li> <li>• Volume 1, Section 5.3.3 (SMC, Section 22.805.080.B.3) – Pre-developed Pasture Standard</li> <li>• Figure 2.6 – North End Creek and Small Lake Basins</li> <li>• Figure 2.7 – South End Creek and Small Lake Basins</li> <li>• Volume 3, Section 3.4 – BMP Selection for Flow Control</li> <li>• Volume 3, Section 4.1 – Sizing Approach</li> </ul>

**4.4.3.3. Parcel-based Projects Discharging to Non-listed Creek Basins – Flow Control**

Stormwater Code Language	References
<p>SMC 22.805.050.B.3 – Parcel-based projects discharging into a creek not listed in subsection 22.805.050.B.2 shall:</p> <p>a. Comply with subsection 22.805.080.B.2 (Pre-developed Forested Standard) if the existing land cover is forested and one or more of the following apply:</p> <p><i>Final code language to be added to final manual</i></p> <ol style="list-style-type: none"> <li>1. The project adds 5,000 square feet or more of new impervious surface and the total new plus replaced impervious surface is 10,000 square feet or more; or</li> <li>2. The project converts 3/4 acres or more of vegetation to lawn or landscaped areas and from which there is a surface discharge into a natural or man-made conveyance system from the site; or</li> <li>3. The project converts 2.5 acres or more of vegetation to pasture and from which there is a surface discharge into a natural or man-made conveyance system from the site; or</li> </ol>	<ul style="list-style-type: none"> <li>• Volume 1, Section 5.3.2 (SMC, Section 22.805.080.B.2) – Pre-developed Forested Standard</li> <li>• Volume 1, Section 5.3.3 (SMC, Section 22.805.080.B.3) – Pre-developed Pasture Standard</li> <li>• Figure 2.6 – North End Creek and Small Lake Basins</li> <li>• Figure 2.7 – South End Creek and Small Lake Basins</li> <li>• Volume 3, Section 3.4 – BMP Selection for Flow Control</li> <li>• Volume 3, Section 4.1 – Sizing Approach</li> </ul>

Stormwater Code Language	References
<p>4. The project adds 5,000 square feet or more of new impervious surface and, through a combination of effective impervious surfaces and converted pervious surfaces, recurrence in peak flow frequency is estimated using a continuous model approved by the Director.</p> <p>b. Comply with subsection 22.805.080.B.3 (Pre-developed Pasture Standard) if the criteria in subsection 22.805.050.B.3.a do not apply and the total new plus replaced impervious surface is 2,000 square feet or more.</p> <p><i>Final code language to be added to final manual</i></p>	

**4.4.3.4. Parcel-based Projects Discharging to Small Lake Basins – Flow Control**

Stormwater Code Language	References
<p>SMC 22.805.050.B.4 – Parcel-based projects discharging into Bitter Lake, Green Lake, or Haller Lake drainage basins shall comply with subsection 22.805.080.B.4 (Peak Control Standard) if the total new plus replaced impervious surface is 2,000 square feet or more.</p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• Volume 1, Section 5.3.4 (SMC, Section 22.805.080.B.4) – Peak Control Standard</li> <li>• Figure 2.6 – North End Creek and Small Lake Basins</li> <li>• Figure 2.7 – South End Creek and Small Lake Basins</li> <li>• Volume 3, Section 3.4 – BMP Selection for Flow Control</li> <li>• Volume 3, Section 4.1 – Sizing Approach</li> </ul>

**4.4.3.5. Parcel-based Projects Discharging to Public Combined Sewer – Flow Control**

At the time this Manual was developed, there was one public combined sewer basin that was determined to have sufficient capacity to carry existing and anticipated loads. Parcel-based projects are not required to provide peak flow control in this basin. Refer to the DPD website to determine which basins are included in this category ([www.seattle.gov/dpd/codesrules/codes/stormwater](http://www.seattle.gov/dpd/codesrules/codes/stormwater)).

Stormwater Code Language	References
<p>SMC 22.805.050.B.5 – Unless the Director of SPU determines the public combined sewer has sufficient capacity to carry existing and anticipated loads, Parcel-based projects discharging into the public combined sewer shall comply with subsection 22.805.080.B.4 (Peak Control Standard) if the total new plus replaced impervious surface is 10,000 square feet or more.</p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• Volume 1, Section 5.3.4 (SMC, Section 22.805.080.B.4) – Peak Control Standard</li> <li>• Figure 2.8 – Public Combined Sewer Basins</li> <li>• Volume 3, Section 3.4 – BMP Selection for Flow Control</li> <li>• Volume 3, Section 4.1 – Sizing Approach</li> </ul>

**4.4.3.6. Parcel-based Projects Discharging to a Capacity-constrained System – Flow Control**

Stormwater Code Language	References
<p>SMC 22.805.050.B.6 – In addition to applicable minimum requirements for flow control in subsection 22.805.050.B.1 through subsection 22.805.050.B.5, parcel-based projects discharging into a capacity-constrained system shall also comply with subsection 22.805.080.B.4 (Peak Control Standard) if the total new plus replaced impervious surface is 2,000 square feet or more.</p> <p>SMC 22.801.040 – “Capacity-constrained system” means a drainage system or a public combined sewer that the Director of SPU has determined to have inadequate capacity to carry drainage water, a public drainage system to which groundwater is permanently discharged, and the informal drainage system (including ditches and culverts).</p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• Volume 1, Section 4.4.3.1 (SMC, Section 22.805.050.B.1) – Discharges to Wetlands</li> <li>• Volume 1, Section 4.4.3.2 (SMC, Section 22.805.050.B.2) – Discharges to Listed Creek Basins</li> <li>• Volume 1, Section 4.4.3.3 (SMC, Section 22.805.050.B.3) – Discharges to Non-listed Creek Basins</li> <li>• Volume 1, Section 4.4.3.4 (SMC, Section 22.805.050.B.4) – Discharges to Small Lake Basins</li> <li>• Volume 1, Section 4.4.3.5 (SMC, Section 22.805.050.B.5) – Discharges to Public Combined Sewer</li> <li>• Volume 1, Section 5.3.4 (SMC, Section 22.805.080.B.4) – Peak Control Standard</li> <li>• Volume 3, Section 3.4 – BMP Selection for Flow Control</li> <li>• Volume 3, Section 4.1 – Sizing Approach</li> </ul>

**4.4.3.7. Parcel-based Projects Discharging Groundwater- Flow Control**

Stormwater Code Language	References
<p>SMC 22.805.050.C.7- parcel-based projects that will permanently discharge groundwater to a public drainage system or to a public combined sewer shall also comply with subsection 22.805.080.B.4 (Peak Control Standard) if the total new plus replaced impervious surface is 2,000 square feet or more.</p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• SMC, Section 22.805.050.C.7– Discharges from Groundwater</li> </ul>

**4.4.4. Water Quality Treatment**

Stormwater Code Language	References
<p>SMC 22.805.050.C – Parcel-based projects not discharging to the public combined sewer shall comply with the minimum requirements for treatment contained in Section 22.805. 090, to the extent allowed by law,</p> <p><i>Final code language to be added to final manual</i></p> <ol style="list-style-type: none"> <li>1. The total new plus replaced pollution-generating impervious surface is 2,000 square feet or more.</li> <li>2. The total new plus replaced pollution-generating pervious surfaces is three-quarters of an acre or more and from which there is a surface discharge in a natural or man-made conveyance system from the site.</li> </ol>	<ul style="list-style-type: none"> <li>• SMC, Section 22.805.090 – Minimum Requirements for Treatment</li> <li>• Volume 3, Section 3.5 – BMP Selection for Water Quality Treatment</li> <li>• Volume 3, Section 4.1 – Sizing Approach</li> </ul>

## 4.5. Utility Projects

Stormwater Code Language	References
<p><i>SMC 22.800.040.A.2.a – Maintenance, repair, or installation of underground or overhead utility facilities, such as, but not limited to, pipes, conduits and vaults, and that includes replacing the ground surface with in-kind material or materials with similar runoff characteristics are not required to comply with Section 22.805.060 (Minimum Requirements for Roadway Projects), Section 22.805.070 (Minimum Requirements for On-site Stormwater Management), Section 22.805.080 (Minimum Requirements for Flow Control), or Section 22.805.090 (Minimum Requirements for Treatment), except as modified as follows:</i></p> <p>a. <i>Installation of underground or overhead utility facilities that are integral with and contiguous to a road-related project shall comply with Section 22.805.060 (Minimum requirements for Roadway Projects).</i></p>	<ul style="list-style-type: none"> <li>• <i>Volume 1, Section 4.3 (SMC, Section 22.805.060) – Minimum Requirements for Roadway Projects</i></li> <li>• <i>Volume 1, Section 5.2 (SMC, Section 22.805.070) – Minimum Requirements for On-site Stormwater Management</i></li> <li>• <i>Volume 1, Section 5.3 (SMC, Section 22.805.080) – Minimum Requirements for Flow Control</i></li> <li>• <i>Volume 1, Section 5.4 (SMC, Section 22.805.090) – Minimum Requirements for Treatment</i></li> </ul>

## 4.6. Pavement Maintenance Projects

Stormwater Code Language	References
<p><i>SMC 22.800.040.A.2.b – Pavement maintenance practices limited to the following activities are not required to comply with Section 22.805.060 (Minimum requirements for Roadway Projects), Section 22.805.070 (Minimum Requirements for On-site Stormwater Management), Section 22.805.080 (Minimum Requirements for Flow Control), or Section 22.805.090 (Minimum Requirements for Treatment):</i></p> <p>2. <i>Overlaying existing asphalt or concrete pavement with asphalt or concrete without expanding the area of coverage;</i></p> <p>3. <i>Shoulder grading;</i></p> <p>4. <i>Reshaping or regrading drainage ditches;</i></p> <p>5. <i>Crack sealing;</i></p> <p>6. <i>Vegetation maintenance</i></p> <p>7. <i>Pavement preservation activities that do not expand the road prism</i></p>	<ul style="list-style-type: none"> <li>• <i>Volume 1, Section 4.3 (SMC, Section 22.805.060) – Minimum Requirements for Roadway Projects</i></li> <li>• <i>Volume 1, Section 5.2 (SMC, Section 22.805.070) – Minimum Requirements for On-site Stormwater Management</i></li> <li>• <i>Volume 1, Section 5.3 (SMC, Section 22.805.080) – Minimum Requirements for Flow Control</i></li> <li>• <i>Volume 1, Section 5.4 (SMC, Section 22.805.090) – Minimum Requirements for Treatment</i></li> <li>• <i>Appendix G – Stormwater Control Operations and Maintenance Requirements</i></li> </ul>

## 4.7. WSDOT Projects

Stormwater Code Language	References
<p><i>SMC 22.800.040.A.6 – With respect to all state highway right-of-way under WSDOT control within the jurisdiction of the City of Seattle, WSDOT shall use the current, approved Highway Runoff Manual (HRM) for its existing and new facilities and rights-of-way, as addressed in WAC 173-270-030(1) and (2). Exceptions to this exemption, where more stringent stormwater management requirements apply, are addressed in WAC 173-270-030(3)(b) and (c).</i></p> <p><i>a. When a state highway is located in the jurisdiction of a local government that is required by Ecology to use more stringent standards to protect the quality of receiving waters, WSDOT shall comply with the standards identified in the uniform stormwater management.</i></p> <p><i>b. WSDOT shall comply with standards identified in watershed action plans for WSDOT rights-of-way to the extent required by state law.</i></p> <p><i>c. Other instances where more stringent local stormwater standards apply are projects subject to tribal government standards or to the stormwater management-related permit conditions imposed under Chapter 25.09 to protect environmentally critical areas and their buffers (under the Growth Management Act), an NPDES permit, or shoreline master programs (under the Shoreline Management Act). In addition, WSDOT shall comply with local jurisdiction stormwater standards when WSDOT elects, and is granted permission, to discharge stormwater runoff into a municipality's drainage system or combined sewer.</i></p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• <i>Volume 1, Section 4.3 (SMC, Section 22.805.060) – Minimum Requirements for Roadway Projects</i></li> <li>• <i>WSDOT Highway Runoff Manual</i></li> <li>• <i>WAC, Sections 173-270-030(1) and (2) – Best Management Practices – Approved Manual Required and Amendments to Manual</i></li> <li>• <i>WAC, Sections 173-270-030(3)(b) and (c) – More Stringent Standards</i></li> <li>• <i>SMC, Chapter 25.09 – Environmentally Critical Areas</i></li> </ul>

## 4.8. Special Circumstances

Some projects do not closely fit defined project types and, therefore, require a case-by-case review to determine the applicable minimum requirements. These projects shall first go through a pre-permit review process to assist the proponent in identifying the specific minimum requirements to be applied. The following list is not comprehensive, but gives the proponent an indication of the complexity of the special circumstances. Examples of special circumstances projects include:

- Bridges or tunnels
- Construction over water
- Closed-contour basins
- Draining into more than one basin
- Multiple blocks or a subdivision
- Railroads
- Work performed in more than one jurisdiction

# CHAPTER 5 – MINIMUM REQUIREMENT STANDARDS

This chapter summarizes the standards related to the following minimum requirements:

- Soil amendment (*Section 5.1*)
- On-site stormwater management (*Section 5.2*)
- Flow control (*Section 5.3*)
- Water quality treatment (*Section 5.4*)

## 5.1. Soil Amendment

Projects triggering this minimum requirement shall retain and protect undisturbed soil in areas not being developed and, prior to completion of the project, amend all new, replaced, and disturbed topsoil with organic matter. This requirement applies to the four primary project types (single-family residential, trail and sidewalk, parcel-based, and roadway projects). General soil amendment requirements included in SMC, Section 22.805.030, Section 22.805.040, Section 22.805.050, and Section 22.805.060 are summarized below.

Stormwater Code Language	References
<p><i>SMC, Section 22.805.030, SMC, Section 22.805.040, SMC, Section 22.805.060- Retain and protect undisturbed soil in areas not being developed, and prior to completion of the project, amend all new, replaced, and disturbed topsoil (including construction lay-down areas)</i></p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• <i>SMC, Section 22.805.030 – Soil Amendment</i></li> <li>• <i>SMC, Section 22.805.040 – Soil Amendment</i></li> <li>• <i>SMC, Section 22.805.050 – Soil Amendment</i></li> <li>• <i>SMC, Section 22.805.060 – Soil Amendment</i></li> </ul>

## 5.2. On-site Stormwater Management

Projects triggering this minimum requirement shall evaluate on-site stormwater management to meet the applicable design requirements for the specific project type and discharge location. On-site stormwater management includes BMPs that can be used to meet flow control and water quality treatment requirements. General on-site stormwater management requirements included in SMC, Section 22.805.070 are summarized below. Refer to *Section 5.2.1* and *5.2.2* for the On-site Performance Standard and the On-site List Approach.

Stormwater Code Language	References
<p><i>SMC, Section 22.805.070 -</i></p> <p><i>A. Applicability. The requirements of this subsection apply to the extent required in Section 22.805.050.030 to Section 22.805.060.</i></p> <p><i>B. Requirements. On-site stormwater management shall be installed to the extent allowed by law and maintained per rules promulgated by the Director to receive flows from the new plus replaced impervious surfaces on the site being developed shall:</i></p> <ol style="list-style-type: none"> <li><i>1. Retain and protect existing trees and native vegetation to the maximum extent feasible, and</i></li> <li><i>2. Prior to completion of the project, all new, replaced, and shall be amended with organic matter per rules promulgated by the Director to improve the management of drainage water flow and water quality, and</i></li> <li><i>3. Comply with Subsection 22.805.070.C (On-site Performance Standard), or</i></li> <li><i>4. Subsection 22.805.070.D (On-site Lists). For each project surface, follow the appropriate project table to evaluate GSI BMPs in the order shown for that type of surface, by category. Consider any of the GSI BMPs in the first category. Use the first GSI BMP that is considered feasible. Consider all GSI BMPs in a category before moving on to the next category and evaluating those BMPs in the same manner. No other GSI BMP is necessary for a given project surface. Feasibility shall be determined by evaluation against:</i> <ol style="list-style-type: none"> <li><i>a. Design criteria, limitations, and infeasibility criteria identified for each BMP in the Rules promulgated by the Director including that a BMP is infeasible if it does not meet the minimum design criteria for the project in the space remaining on the project site; and</i></li> <li><i>b. Competing Needs: Subsection 22.805.070.D (On-site List) can be superseded or reduced by the Director if the installation of the BMPS is in conflict with:</i> <ol style="list-style-type: none"> <li><i>1) The following federal or state laws, rules, and standards: Historic Preservation and Archaeology Laws per SMC 22.805.070.E (Competing Historic Preservation and Archaeology Laws), Federal Superfund or Washington State Model Toxics Control Act, Federal Aviation Administration</i></li> </ol> </li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>• <i>Volume 1, Section 4.1 – Single Family Residential Projects</i></li> <li>• <i>Volume 1, Section 4.2 – Trail and Sidewalk Projects</i></li> <li>• <i>Volume 1, Section 4.3.2 – On-site Stormwater Management for Roadway Projects</i></li> <li>• <i>Volume 1, Section 4.4.2 – On-site Stormwater Management for Parcel-Based Projects</i></li> <li>• <i>Volume 1, Section 5.2.1 (SMC, Section 22.805.070.C) – On-site Performance Standard</i></li> <li>• <i>Volume 1, Section 5.2.2 (SMC, Section 22.805.070.D) – On-site Lists</i></li> <li>• <i>Volume 3, Section 3.3 – BMP Selection for On-site Stormwater Management</i></li> <li>• <i>Volume 3, Section 4.1 – Sizing Approach</i></li> <li>• <i>Volume 3, Section 5.1 – Soil Amendment BMP</i></li> <li>• <i>Volume 3, Section 5.2 – Tree Planting and Retention</i></li> <li>• <i>Appendix C – On-site Stormwater Management Infeasibility Criteria</i></li> </ul>

Stormwater Code Language	References
<p><i>requirements for airports, Americans with Disabilities Act; or</i></p> <p>2) <i>Special zoning district design criteria adopted and being implemented pursuant to a community planning process. Special zoning district criteria include, for example, pedestrian zone overlays and minimum floor area ratio requirements. See also</i></p> <p><i>Final code language to be added to final manual</i></p> <p>3) <i>Public health and safety standards; or</i></p> <p>4) <i>Transportation regulations to maintain the option for future expansion or multi-modal use of public rights-of-way; or</i></p> <p>5) <i>Chapter 15.43 Tree and Vegetation Management in Public Places; Chapter 25.09 Regulations for Environmentally Critical Areas; and Chapter 25.11 Tree Protection and Chapter XXX Standards for Vegetation in the Shoreline Master Plan.</i></p>	

Projects triggering this minimum requirement shall evaluate on-site stormwater management to meet the applicable design requirements for the given project type, size, and discharge location as summarized in *Chapter 2*. Two approaches that can be used for evaluating Minimum Requirements for On-site Stormwater Management include the following:

- On-site performance standard:
  - The post-development discharge durations shall match the discharge durations of a pre-developed forested condition for the range of pre-developed discharge rates from 8 percent of the 2-year peak flow to 50 percent of the 2-year peak flow.
  - The post-development discharge durations shall match the discharge durations of a pre-developed pasture condition for the range of pre-developed discharge rates between the 1 percent and 10 percent exceedance values.
- On-site lists:
  - Select appropriate on-site BMP(s) from a prioritized list (refer to *Volume 3, Section 3.3.1*). A prioritized list has been developed for each of the four primary project types (single-family residential, trail and sidewalk, parcel-based, and roadway projects). For each project type, divide the project area into surfaces with distinct drainage pathways and select on-site BMP(s) for each surface "sub area."

### 5.2.1. On-site Performance Standard

Stormwater Code Language	References
<p>SMC 22.805.070.C -</p> <ol style="list-style-type: none"> <li>1. If the existing impervious coverage is less than 35 percent and the project discharges to a listed creek basin:                             <ol style="list-style-type: none"> <li>a. The post-development discharge peak flow rate and flow durations shall match the pre-developed pasture condition for the range of pre-developed discharge rates between the 1 percent and 10 percent exceedance values.</li> </ol> </li> <li>2. For all other projects:                             <ol style="list-style-type: none"> <li>a. The post-development discharge peak flow rate and flow durations shall match the pre-developed pasture condition for the range of pre-developed discharge rates between the 1 percent and 10 percent exceedance values.</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>• Volume 3, Section 3.3.2 – On-site Performance Standard Approach</li> <li>• Volume 3, Section 4.1.3 – Modeling Approach</li> <li>• Appendix F – Hydrologic Analysis and Design</li> </ul>

### 5.2.2. On-site Lists

Stormwater Code Language	References
<p>SMC 22.805.070.D –</p> <ol style="list-style-type: none"> <li>1. For single-family residential projects, follow Table 805.1.</li> <li>2. For commercial projects, follow Table 805.2.</li> <li>3. For parcel subdivisions, follow Table 805.3.</li> <li>4. For roadway projects, follow Table 805.4.</li> </ol>	<ul style="list-style-type: none"> <li>• Volume 3, Section 3.3.1 – On-site List Approach</li> <li>• Volume 3, Section 4.1.1 – On-site List Approach</li> <li>• Appendix C – On-site Stormwater Management Infeasibility Criteria</li> </ul>

#### 5.2.2.1. Single-family Residential Projects

Table 805.1. On-site List for Single-family Residential Projects.

Category	BMPs	All Discharge Locations
1	Full Dispersion	R, S
	Infiltration Trenches	R, S
	Dry Wells	R, S
2	Infiltration Basins	R, S
	Rainwater Harvesting	X
	Permeable Pavement Facilities	R,S
	Permeable Pavement Surfaces	S
	Sheet Flow Dispersion	S
3	Concentrated Flow Dispersion	S
	Splashblock Downspout Dispersion	R
	Trench Downspout Dispersion	R
	Non-infiltrating Bioretention	R, S
	Vegetated Roofs	X

Table 805.1 (continued). On-site List for Single-family Residential Projects.

Category	BMPs	All Discharge Locations
4	Final code language to be added to final manual	R
	Final code language to be added to final manual	R
	Final code language to be added to final manual	S

BMPs – Best Management Practices

R = Evaluation is required for all roof runoff from Single-family residential projects.

S = Evaluation is required for all surfaces of Single-family residential projects.

X = Evaluation is not required but is allowed.

<sup>a</sup> Installation is only allowed for projects with less than 5,000 square feet of hard surface infiltrating on the project site.

### 5.2.2.2. Trail and Sidewalk Projects

Table 805.2. On-site List for Trail and Sidewalk Projects.

Category	BMPs	Projects Discharging to a Receiving Water Not Designated by Section 22.801.050, or its Basin	Projects Discharging to a Public Combined Sewer or Capacity Constrained System, <sup>c</sup> or its Basin	Projects Discharging to a Designated Receiving Water, or its Basin
1	Full Dispersion	S	S	S
2	Rain Gardens	S	S	X
	Final code language to be added to final manual	X <sup>a</sup>	X <sup>a</sup>	X <sup>a,b</sup>
	Permeable Pavement Facilities	X <sup>a</sup>	S <sup>a</sup>	X <sup>a,b</sup>
3	Sheet Flow Dispersion	S	S	S
	Concentrated Flow Dispersion	S	S	S

BMPs – Best Management Practices

S = Evaluation is required for all surfaces of trail or sidewalk projects.

X = Evaluation is not required for trail or sidewalk projects.

<sup>a</sup> Minimum permeable pavement area allowed in right-of-way is 2,000 square feet of pavement within the project site.

<sup>b</sup> Installation is not allowed in the right-of-way if new plus replaced pollution-generating hard surface area is less than 2,000 square feet of pavement within the project site.

<sup>c</sup> Does not include any project discharging to a receiving water not designated by Section 22.801.050, or its basin, even if the project discharges to a capacity-constrained system or its basin.

### 5.2.2.3. Parcel-based Projects

Table 805.3. On-site List for Parcel-based Projects.

Category	BMPs	All Basins
1	Full Dispersion	R, S
	Infiltration Trenches	R, S
	Dry Wells	R, S
2	Rain Gardens	R <sup>a</sup> , S <sup>a</sup>
	Final code language to be added to final manual	R, S
	Final code language to be added to final manual	X
	Final code language to be added to final manual	R, S
	Permeable Pavement Surfaces	S
3	Sheet Flow Dispersion	R, S
	Concentrated Flow Dispersion	S
	Splashblock Downspout Dispersion	R
	Trench Downspout Dispersion	R
	Non-infiltrating Bioretention	R, S
	Vegetated Roofs	X
4	Perforated Stub-out Connections	R
	Newly Planted Trees	S

BMPs – Best Management Practices

R = Evaluation is required for roof runoff from parcel-based projects.

S = Evaluation is required for all surfaces of parcel-based projects, unless otherwise noted below.

<sup>a</sup> Installation is only allowed for projects not required to meet Section 22.805.080 (Minimum Requirements for Flow Control) or Section 22.805.090 (Minimum Requirements for Treatment) and with less than 5,000 sf of hard surface infiltrating on site.

<sup>b</sup> Evaluation is not required for projects with less 10,000 sf of new plus replaced rooftop surface.

<sup>c</sup> Evaluation is not required for projects with less 5,000 sf of new plus replaced rooftop surface.

5.2.2.4. Roadway Projects

Table 805.4. On-site List for Roadway Projects.

Category	BMPs	Projects Discharging to a Receiving Water Not Designated by Section 22.801.050, or its Basin	Projects Discharging to a Public Combined Sewer or Capacity Constrained System, <sup>g</sup> or its Basin	Projects Discharging to a Designated Receiving Water Basin
1	Full Dispersion	S	S	S
2	Rain Gardens	S <sup>a</sup>	S <sup>a</sup>	S <sup>a</sup>
	Infiltration	S	S <sup>b</sup>	S <sup>b, c</sup>
	Permeable Pavement Facilities	S	X <sup>e, f</sup>	X <sup>c, e, f</sup>
	Permeable Pavement Surfaces	S	S <sup>e, f</sup>	S <sup>c, e, f</sup>
3	Sheet Flow Dispersion	S	S	S
	Concentrated Flow Dispersion	S	S	S

*Final code language to be added to final manual*

BMPs – Best Management Practices

PGIS – Pollution generating impervious surface

S = Evaluation is required for all surfaces of Roadway Projects.

X = Evaluation is not required for Roadway Projects, but is allowed.

<sup>a</sup> Installation is only allowed for projects not required to meet Section 22.805.080 (Minimum Requirements for Flow Control) or Section 22.805.090 (Minimum Requirements for Treatment) and with less than 5,000 sf of hard surface infiltrating on site.

<sup>b</sup> Minimum bioretention cell size top area in right-of-way is 500 sf (including pre-settling area). Evaluation is only required and installation only allowed when contributing area is sufficient to warrant minimum bioretention cell size in right-of-way.

<sup>c</sup> Evaluation is not required, and installation is not allowed, if new plus replaced pollution-generating hard surface is less than 2,000 sf.

<sup>d</sup> Evaluation of roadway surfaces is not required, and installation is not allowed, if roadway is an arterial street/collector.

<sup>e</sup> Evaluation of roadway surfaces, including alleys, is not required and installation is not allowed.

<sup>f</sup> Minimum permeable pavement area allowed in right-of-way is 2,000 sf of pavement within the project site.

<sup>g</sup> Does not include any project discharging to a receiving water not designated by Section 22.801.050, or its basin, even if the project discharges to a capacity-constrained system or its basin.

### 5.3. Flow Control

Projects triggering this minimum requirement shall install flow control BMPs meeting the applicable design requirements for the given project type, size, and discharge location as summarized in *Chapter 2*. General flow control requirements included in SMC, Section 22.805.080 are summarized below. Refer to *Section 5.3.1* through *5.3.4* for specific flow control standards for wetland protection, pre-developed forested, pre-developed pasture, and peak control.

Stormwater Code Language	References
<p><i>SMC, Section 22.805.080 -</i></p> <p><i>A. Applicability: The requirements of this subsection apply to the extent required in Section 22.805.050 to Section 22.805.060.</i></p> <p><i>B. Requirements. Flow control facilities shall be installed to the extent allowed by law and maintained per rules promulgated by the Director to receive flows from that portion of the site being developed. Post-development discharge determination must be made for all projects. Flow control facilities that receive flows from less than that portion of the site being developed may be installed if the total new plus replaced impervious surface is less than 10,000 square feet, the project site uses only green stormwater infrastructure to meet the requirement, and the green stormwater infrastructure provides substantially equivalent environmental protection as facilities not using green stormwater infrastructure that receive flows from all of the portion of the site being developed.</i></p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• <i>Volume 1, Section 4.3.3 – Minimum Requirements for Flow Control for Roadway Projects</i></li> <li>• <i>Volume 1, Section 4.4.3 – Minimum Requirements for Flow Control for Parcel-Based Projects</i></li> <li>• <i>Volume 1, Section 5.3.1 – Wetland Protection Standard</i></li> <li>• <i>Volume 1, Section 5.3.2 – Pre-developed Forested Standard</i></li> <li>• <i>Volume 1, Section 5.3.3 – Pre-developed Pasture Standard</i></li> <li>• <i>Volume 1, Section 5.3.4 – Peak Control Standard</i></li> </ul>

The performance standards applicable to the key Minimum Requirements for Flow Control include the following:

- Wetland Protection Standard: Protect the functions and values of the wetland.
- Pre-developed Forested Standard: Match the post-development discharge flow rates and durations to a pre-developed forested condition for the range of pre-developed discharge rates from 50 percent of the 2-year recurrence interval flow up to the 50-year recurrence interval flow.
- Pre-developed Pasture Standard: Match the post-development discharge flow rates and durations to a pre-developed pasture condition for the range of pre-developed discharge rates from 50 percent of the 2-year recurrence interval flow up to the 2-year recurrence interval flow.
- Peak Control Standard: The post-development 25-year recurrence interval flow shall not exceed 0.4 cubic feet per second per acre (cfs/acre); and the 2-year recurrence interval flows shall not exceed 0.15 cfs/acre.

Note:

- If a project requires compliance with the Peak Control Standard and either the Pre-developed Forested or Pre-developed Pasture Standard apply, the facility shall be sized to the standard that results in the largest facility (i.e., to meet the more stringent of the requirements).
- Projects may manage a smaller portion of the project’s new and replaced hard surface area to meet flow control requirements if only on-site BMPs are employed. Specifically, if flow control is required and only on-site BMPs are used, the hard surface area requiring management may be reduced by up to 2,000 square feet if on-site BMPs cannot feasibly manage the last 2,000 sf of new and replaced hard surface area.
- If an infiltration basin or any detention BMPs are used, all of the new and replaced hard surface area shall be managed. Note that the minimum hard surface area tributary to an orifice controlled detention facility shall be 2,000 square feet.
- When off-site flows cannot feasibly bypass proposed flow control BMPs, the flow control BMPs shall be modeled and sized to handle the combined total flow (refer to *Volume 3, Section 4.2.2*).
- Flow control BMPs are not required if the site fully infiltrates all flows, as determined by a licensed civil engineer using an approved continuous runoff model for the 158-year simulation period (refer to *Appendix F*).

Excerpts from the Stormwater Code (in italics) are presented below in the first column in each section. The second column in each section provides applicable references.

**5.3.1. Wetland Protection Standard**

Stormwater Code Language	References
<p><i>SMC 22.805.080.B.1 – Protect the functions and values of wetlands and their buffers from all projects discharging stormwater directly or indirectly to them. The hydrologic conditions, vegetative community, and substrate characteristics of the wetlands shall be protected and impacts caused by discharge of sediment, heat and other pollutants and contaminants into wetlands shall be minimized through best management practices, infiltration, and maintenance of temporary and permanent controls. The total volume of stormwater discharging into a wetland shall not be more than:</i></p> <ul style="list-style-type: none"> <li>• <i>20 percent higher or lower than the pre-developed volume during a single precipitation event, and</i></li> <li>• <i>15 percent higher or lower than the pre-developed volume on a monthly basis.</i></li> </ul> <p><i>Prior to authorizing new discharges to a wetland, alternative discharge locations shall be evaluated and infiltration options outside the wetland shall be maximized unless doing so will adversely impact the functions and values of the affected wetlands. If one or more of the flow control requirements contained in 22.805.080.B.2 through 22.805.080.B.4 also apply to the project, an analysis shall be conducted to ensure that the functions and values of the affected wetland are protected before</i></p>	<ul style="list-style-type: none"> <li>• SMC, Section 22.805.080.B.2 – Pre-developed Forested Standard</li> <li>• SMC, Section 22.805.080.B.3 – Pre-developed Pasture Standard</li> <li>• SMC, Section 22.805.080.B.4 – Peak Control Standard</li> <li>• <i>Volume 1, Section 3.7 – Protect Wetlands</i></li> <li>• Guide sheets 1 through 3 in the SWMMWW Volume I, Appendix I-D) (Ecology 2014)</li> </ul>

Stormwater Code Language	References
<p>implementing these flow control requirements. Projects triggering this requirement shall refer to Guide Sheets #1 through #3 presented in Washington (Ecology 2012) for additional guidance. Notwithstanding any provision in this subtitle, the values of values shall result from actions regulated by this subtitle.</p> <p><i>Final code language to be added to final manual</i></p>	

### 5.3.2. Pre-developed Forested Standard

Stormwater Code Language	References
<p>SMC 22.805.080.B.2 – The post-development discharge flow durations shall match the pre-developed forested condition for the range of pre-developed discharge rates of the 2-year recurrence interval flow up to the 50-year recurrence interval flow.</p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• Volume 3, Section 3.4 – BMP Selection for Flow Control</li> <li>• Volume 3, Section 4.1 – Sizing Approach</li> <li>• Appendix F – Hydrologic Analysis and Design</li> </ul>

### 5.3.3. Pre-developed Pasture Standard

Stormwater Code Language	References
<p>SMC 22.805.080.B.3 – The post-development discharge flow durations shall match to the pre-developed forested condition for the range of pre-developed discharge rates of the 2-year recurrence interval flow up to the 50-year recurrence interval flow.</p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• Volume 3, Section 3.4 – BMP Selection for Flow Control</li> <li>• Volume 3, Section 4.1 – Sizing Approach</li> <li>• Appendix F – Hydrologic Analysis and Design</li> </ul>

### 5.3.4. Peak Control Standard

Stormwater Code Language	References
<p>SMC 22.805.080.B.4 – The post-development peak flow with a 4 percent annual probability (25-year recurrence flow) shall not exceed 0.4 cubic feet per second per acre. The post-development peak flow with a 5 percent annual probability (20-year recurrence flow) shall not exceed 0.15 cubic feet per second per acre.</p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• Volume 3, Section 3.4 – BMP Selection for Flow Control</li> <li>• Volume 3, Section 4.1 – Sizing Approach</li> <li>• Appendix F – Hydrologic Analysis and Design</li> </ul>

## 5.4. Water Quality Treatment

Projects triggering this minimum requirement based on the amount of pollution generating hard surface (PGHS) shall install water quality treatment BMPs, which typically remove pollutants through a combination of gravity settling, filtration, biological uptake, and soil adsorption. General water quality treatment requirements included in SMC, Section 22.805.090 are summarized below.

**Note:**

- Projects may manage a smaller portion of the project’s new and replaced hard surface area to meet water quality treatment requirements if only on-site BMPs are employed. Specifically, if water quality treatment is required and only on-site BMPs are used, the hard surface area requiring management may be reduced by up to 2,000 square feet if on-site BMPs cannot feasibly manage the last 2,000 square feet of new and replaced hard surface area.

Stormwater Code Language	References
<p><i>SMC, Section 22.805.090 -</i></p> <p><i>A. Applicability: The requirements of this subsection apply to the extent required in Section 22.805.050 to Section 22.805.060.</i></p> <p><i>B. Requirements: Water quality treatment facilities shall be installed to the extent allowed by law and maintained per rules developed by the Director. Runoff from the pollution generating surfaces of impervious areas, including non-pollution generating surfaces (e.g., roofs), dewatering activities, and offsite areas, cannot be separated or bypassed, treatment BMPs shall be designed for the entire area draining to the treatment facility. All projects shall use green stormwater infrastructure to the maximum extent feasible to meet the minimum requirements.</i></p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• <i>Volume 1, Section 4.3.4 – Treatment Requirements for Roadway Projects</i></li> <li>• <i>Volume 1, Section 4.4.4 – Treatment Requirements for Parcel-Based Projects</i></li> <li>• <i>Volume 1, Section 5.4.1.1 – Runoff Treatment Volume</i></li> <li>• <i>Volume 1, Section 5.4.1.2 – Runoff Treatment Rates</i></li> <li>• <i>Volume 1, Section 5.4.1.3 – Infiltration Treatment Requirements</i></li> </ul>

Water quality treatment BMPs shall be designed based on the stormwater runoff volume from the contributing area or a peak flow rate as outlined in the following subsections.

### 5.4.1. General Water Quality Treatment Requirements

#### 5.4.1.1. Runoff Treatment Volume

The water quality design treatment volume is determined as follows:

Stormwater Code Language	References
<p><i>SMC, Section 22.805.090.B.1.a – The daily runoff volume at or below which 91 percent of the total runoff volume for the simulation period</i></p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• <i>Volume 1, Section 5.4.1.3 – Infiltration Treatment Requirements</i></li> <li>• <i>Volume 3, Section 4.1 – Sizing Approach</i></li> <li>• <i>Appendix F – Hydrologic Analysis and Design</i></li> </ul>

### 5.4.1.2. *Runoff Treatment Rates*

Stormwater Code Language	References
<p>SMC, Section 22.805.090.B.1.b – Different design flow rates are required depending on whether a treatment facility will be located upstream or downstream of a detention facility:</p> <p>1. For facilities located upstream of detention or when detention is not provided, the design flow rate is the release rate from the detention facility that has a 50 percent annual probability of occurring in any given year (2-year recurrence interval), as determined using an approved continuous runoff model.</p> <p>2. For facilities located downstream of detention, the design flow rate is the release rate from the detention facility that has a 50 percent annual probability of occurring in any given year (2-year recurrence interval), as determined using an approved continuous runoff model.</p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• Volume 3, Section 4.1 – Sizing Approach</li> <li>• Appendix F – Hydrologic Analysis and Design</li> </ul>

### 5.4.1.3. *Infiltration Treatment Requirements*

Stormwater Code Language	References
<p>SMC, Section 22.805.090.B.1.c – Infiltration facilities designed for water quality treatment must infiltrate 91 percent of the total runoff volume as determined using an approved continuous runoff model. To provide for insubstantial conditions, the minimum facility designed for water quality treatment must infiltrate the design flow rate (the water quality design treatment volume (the 91st percentile, 24-hour volume) within 48 hours.</p> <p><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• Volume 1, Section 5.4.1.1 – Runoff Treatment Volume</li> <li>• Volume 3, Section 4.1 – Sizing Approach</li> <li>• Appendix F – Hydrologic Analysis and Design</li> </ul>

Note that the “91st percentile, 24-hour volume” referenced above represents the upper limit of the range of daily volumes that accounts for 91 percent of the entire runoff volume over a multi-decade period of record.

## 5.4.2. *Water Quality Treatment Standards*

Projects triggering this minimum requirement shall install water quality treatment BMPs for the given project type, size, and discharge location as summarized in *Chapter 2*. The performance standards applicable to the key Minimum Requirements for Water Quality Treatment include the following:

- **Basic Treatment:** Install and maintain a basic water quality treatment facility. The requirements for determining the applicable water quality treatment volume and/or rate are presented in *Section 5.4.1*, with additional modeling requirements and guidance presented in *Appendix F*. If the requirement for basic treatment applies to a project, all other treatment minimum requirements (oil, phosphorus, and enhanced treatment) shall be evaluated to determine if they are applicable.
- **Oil Control Treatment:** Install and maintain an oil control treatment facility for high-use sites.
- **Phosphorus Treatment:** Install and maintain a phosphorus treatment facility for projects discharging into nutrient-critical receiving waters.
- **Enhanced Treatment:** Install and maintain an enhanced treatment facility.

When triggered, water quality treatment BMPs shall be installed to treat flows from the pollution-generating hard surface (PGHS) and pollution-generating pervious surface (PGPS) on the site being developed. When stormwater flows from other areas, including non-PGHS (e.g., roofs), dewatering activities, and flows that cannot be separated or bypassed, water quality treatment BMPs shall be sized for the combined total flow. Direct discharge of untreated drainage water to groundwater is prohibited (SMC, Section 22.805.090.B.6).

Excerpts from the Stormwater Code (in italics) are presented below in the first column in each section. The second column in each section provides applicable references.

#### **5.4.2.1. Basic Treatment**

Basic treatment is required in the following circumstances:

- Project sites that discharge stormwater to the ground (i.e., via infiltration) UNLESS:
  - The soil suitability criteria for infiltration treatment are met (refer to *Volume 3, Section 4.5.2*) and pre-settling is provided (refer to *Volume 3, Section 4.4*), or
  - The project site uses infiltration strictly for flow control - not treatment - and the discharge is within 1/4 mile of a nutrient-critical receiving water (refer to *Section 5.4.2.3*), or
  - The project site is required to provide Enhanced Treatment (refer to *Section 5.4.2.4*).
- Single-family residential projects not otherwise required to provide phosphorus control (*Section 5.4.2.3*) as designated by EPA, Ecology, or the City
- Project sites discharging directly (or indirectly through a drainage system) to the following Basic Treatment Receiving Waters:
  - All marine waters
  - Lake Union
  - Lake Washington
  - Ship Canal and bays between Lake Washington and Puget Sound
  - Duwamish River
- Project sites that drain to fresh waters, or to waters tributary to fresh waters, that are not designated for aquatic life use and that do not have an existing aquatic life use. As provided in Chapter 173-201A WAC, all surface waters of the state, including but not limited to wetlands, in or near the City are to be protected for designated aquatic life use. For the purposes of the Stormwater Code and this Manual, the City of Seattle interprets “fresh waters designated for aquatic life use” to include at minimum fresh water wetlands as well as small lakes, creeks, and freshwater designated receiving waters.
- Landscaped areas of industrial, commercial, and multi-family project sites
- Parking lots of industrial and commercial project sites, dedicated solely to parking of employees’ private vehicles that do not involve any other pollution-generating activities (e.g., industrial activities; customer parking; storage of erodible or leachable material, wastes, or chemicals; vehicle maintenance).

Stormwater Code Language	References
<p><i>SMC, Section 22.805.090.B.2 – A basic treatment facility shall be required for all projects. The requirements of subsection 22.805.090.B.3 (Control Treatment), subsection 22.805.090.B.4 (Phosphorus Treatment), subsection 22.805.090.B.5 (Enhanced Treatment) are in addition to this basic treatment facility.</i></p> <p><b>Final code language to be added to final manual</b></p>	<ul style="list-style-type: none"> <li>• SMC, Section 22.805.090.B.3 – Oil Control Treatment</li> <li>• SMC, Section 22.805.090.B.4 – Phosphorus Treatment</li> <li>• SMC, Section 22.805.090.B.5 – Enhanced Treatment</li> <li>• <i>Volume 3, Section 3.5 – BMP Selection for Water Quality Treatment</i></li> <li>• <i>Volume 3, Section 4.1 – Sizing Approach</i></li> <li>• <i>Appendix F – Hydrologic Analysis and Design</i></li> </ul>

**5.4.2.2. Oil Control Treatment**

Oil control treatment applies to projects that include “high-use sites” or have NPDES permits that require application of oil control. Gasoline service stations will likely exceed the high-use site threshold. The petroleum storage and transfer criterion is intended to address regular transfer operations such as gasoline service stations, not occasional filling of heating oil tanks. In general, all-day parking areas are not intended to be defined as high-use sites, and should not require oil control.

The project proponent shall develop an ADT estimate for approval by the City ([www.seattle.gov/transportation/tfdmaps.htm](http://www.seattle.gov/transportation/tfdmaps.htm)). The City may also require oil control facilities to be used on sites that may generate high concentrations of oil, but do not meet the high-use site thresholds.

Stormwater Code Language	References
<p><i>SMC, Section 22.805.090.B.3 – An oil control treatment facility shall be required for high-use sites, as defined in 22.801.090.</i></p> <p><i>SMC, Section 22.801.090 – “High-use sites” means sites that typically generate a significant amount of petroleum products, such as gasoline, oil, or other petroleum products, through frequent transfer or oil. High-use sites include:</i></p> <ol style="list-style-type: none"> <li>1. <i>An area of a commercial or industrial site subject to an expected average daily traffic (ADT) count equal to or greater than 100 vehicles per 1,000 square feet of gross building area;</i></li> <li>2. <i>An area of a commercial or industrial site subject to petroleum storage and transfer in excess of 1,500 gallons per year, not including routinely delivered heating oil;</i></li> <li>3. <i>An area of a commercial or industrial site subject to parking, storage or maintenance of 25 or more vehicles that are over 10 tons gross weight (trucks, buses, trains, heavy equipment, etc.);</i></li> <li>4. <i>A road intersection with a measured ADT count of 25,000 vehicles or more on the main roadway and 15,000 vehicles or more on any intersecting roadway, excluding projects proposing primarily pedestrian or bicycle use improvements.</i></li> </ol> <p><b>Final code language to be added to final manual</b></p>	<ul style="list-style-type: none"> <li>• <i>Volume 3, Section 3.5 – BMP Selection for Water Quality Treatment</i></li> </ul>

**5.4.2.3. Phosphorus Treatment**

The requirement to provide phosphorus treatment is determined by the City, Ecology, or the EPA. At the time this Manual was developed, there were no established phosphorus-specific treatment requirements for project-scale treatment BMPs in Seattle. In the future, the City may develop a management plan and implement ordinances or regulations for control of phosphorus from new development and redevelopment for the receiving water(s) of the stormwater drainage. Refer to the DPD website to determine if any nutrient-critical treatment criteria apply ([www.seattle.gov/dpd/codesrules/codes/stormwater](http://www.seattle.gov/dpd/codesrules/codes/stormwater)).

The project proponent shall comply with all applicable legal requirements.

Stormwater Code Language	References
<p><i>SMC, Section 22.805.090.B.4 – A phosphorus treatment facility shall be required for projects that discharge to a receiving water body.</i></p> <p><b>Final code language to be added to final manual</b></p>	<ul style="list-style-type: none"> <li>Volume 3, Section 3.5 – BMP Selection for Water Quality Treatment</li> </ul>

Project sites subject to the phosphorus treatment requirement could also be subject to the enhanced treatment requirement (*Section 5.4.2.4*).

**5.4.2.4. Enhanced Treatment**

Sites that discharge directly (or, indirectly through a drainage system) to a Basic Treatment Receiving Water (*Section 5.4.2.1*) are not subject to enhanced treatment requirements. Likewise, any portion of a project site that is identified as subject to basic treatment requirements only (*Section 5.4.2.1*) are not subject to enhanced treatment requirements.

Stormwater Code Language	References
<p><i>SMC, Section 22.805.090.B.5 – An enhanced treatment facility for reducing concentrations of dissolved metals shall be required for projects that discharge directly to fresh waters, or waters tributary to fresh waters, designated for aquatic life use or have an existing aquatic life use; or use existing strictly follow control (not treatment) and be discharged within 10 miles of fresh waters, designated for aquatic life use or have an existing aquatic life use if they meet the following criteria:</i></p> <p><b>Final code language to be added to final manual</b></p> <ol style="list-style-type: none"> <li>a. For a parcel-based project, the site is an industrial, commercial, or multi-family project.</li> <li>b. For a roadway project, the site is either:             <ol style="list-style-type: none"> <li>1. A fully controlled or a partially controlled limited access highway with Annual Average Daily Traffic counts of 15,000 or more; or</li> <li>2. Any other road with an Annual Average Daily Traffic count of 7,500 or greater.</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>Volume 3, Section 3.5 – BMP Selection for Water Quality Treatment</li> </ul>

Project sites subject to the enhanced treatment requirement could also be subject to the phosphorus treatment requirement if located in an area designated for phosphorus control (*Section 5.4.2.3*).



# CHAPTER 6 – ALTERNATIVE COMPLIANCE

Stormwater Code Language	References
<p><i>SMC 22.800.080 – Authority</i></p> <p><i>The Director of SPU is authorized, to the extent allowed by law:</i></p> <p><i>E. To develop, review, or approve an Integrated Drainage Plan as an equivalent means of complying with the requirements of this subtitle, in which the developer of a project voluntarily enters into an agreement with the Director of SPU to implement an Integrated Drainage Plan that is specific to one or more sites where best management practices are employed such that the impacts of the project on the receiving water body would be achieved by a less integrated, site-by-site implementation of best management practices. (SMC 22.800.080.E)</i></p> <p><i>F. To enter into an agreement with the developer of a project for the developer to voluntarily contribute funds toward the construction of one or more drainage control facilities that mitigate the impacts to the same receiving water that have been identified as a consequence of the proposed development. (SMC 22.800.080.F)</i></p> <p><i>G. To enter into an agreement with the developer of a project for the developer to voluntarily construct one or more drainage control facilities at an alternative location, determined by the Director, to mitigate the impacts to the same receiving water that have been identified as a consequence of the proposed development. (SMC 22.800.080.G)</i></p> <p style="text-align: center;"><i>Final code language to be added to final manual</i></p>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>

When the consequences of the proposed development are from new impervious surfaces, the mitigation should be provided at the same time as completion of the new surfaces. When the consequences of the proposed development are from replaced impervious surfaces, there should be a construction plan and schedule that ensure the stormwater control BMP(s) mitigating the impacts are constructed within 5 years of the original development, which may be required by state law.



# CHAPTER 7 – SITE ASSESSMENT AND PLANNING

To help evaluate minimum requirements and start the process for selecting on-site stormwater management, flow control, and water quality treatment BMPs, each project shall assess and evaluate existing and post-development site conditions. This chapter describes typical site information and design considerations to be identified early in the project development process. The goal of site assessment and planning is to identify any additional stormwater management issues that shall be addressed before selecting on-site stormwater management, flow control, and/or water quality treatment BMPs. Additional information on drainage control reviews and required plan submittals is included in Chapter 8.

## 7.1. Identifying Key Project Components

*Chapter 3* presents steps for determining the applicable on-site stormwater management, flow control, and water quality treatment requirements. The following sections provide additional guidance on key project components that can significantly influence the project design and approach, and should be considered as part of the site assessment and planning step.

### 7.1.1. *Project Boundaries and Structures*

Project boundaries, nearby structures, and other related issues can directly affect stormwater designs. The following shall be addressed before selecting a stormwater BMP:

- Project Boundaries: The project boundaries typically define the limits of disturbance and can affect the thresholds and applicable minimum requirements. Project boundaries generally coincide with the right-of-way and/or property line.
- Setbacks: Property lines, existing and proposed structures, and adjacent right-of-way boundaries shall be identified and considered to evaluate project impacts on adjacent properties.
- Location of Buildings: All existing and proposed buildings shall be identified, including all existing and proposed temporary and permanent structures (such as retaining walls) and impervious surfaces (driveways, patios, etc.). Structures on neighboring properties can also affect stormwater BMP selection.
- Foundations and Footing Drains: The type of proposed foundations and footing drains, including location and extent, shall be determined, to include the following:
  - Conventional spread footings
  - Pile shaft
  - Basement
  - Footing drains and their associated point of discharge, where applicable
  - Water-tight foundation without footing drains
  - Elevation of groundwater table in relation to the footings and basement

### **7.1.2. Soil Condition Assessment**

The soil type and land cover types on the project shall be evaluated to assess the infiltration capacity of the site and the applicability of various stormwater BMPs. General requirements for infiltration feasibility, site characterization, and infiltration rate determination are presented in *Volume 3, Section 4.5.2* and *Appendix D*.

### **7.1.3. Environmentally Critical Areas (ECAs)**

Additional regulatory requirements are placed upon projects that are within or near ECAs, pursuant to SMC, Chapter 25.09. Depending upon the type of ECA, additional requirements or limitations regarding stormwater management may apply.

### **7.1.4. Dewatering**

It is important to have early estimations of the groundwater discharge from the project site. The site's proximity to receiving waters, or its location in areas where there may be perched, static, tidally influenced, or hydraulically connected groundwater can have significant impacts on how the project is designed and which other minimum requirements apply. Refer to the Minimum Requirements for Flow Control (*Section 5.3*) and the Minimum Requirement to Ensure Sufficient Capacity (*Section 3.8*).

If temporary dewatering shall occur, a Side Sewer Permit for Temporary Dewatering (SSPTD) and a Discharge Authorization Letter from King County Industrial Waste may be required prior to commencing dewatering at the site. The SSPTD permit may require compliance with a separate Temporary Dewatering Plan, water quality treatment, flow control requirements, and also require compliance monitoring.

### **7.1.5. Topography**

Because topography will influence how and where stormwater BMPs are incorporated onto the site, the existing and proposed topography shall be considered. Important features to assess include the following:

- Key terrain features, such as closed depressions and grade breaks
- Natural drainage courses, such as swales, ditches, rills, and gullies
- Flow entering and exiting the property
- Roadway grades and elevations

## **7.2. Site Assessment**

The following information shall be evaluated as part of the site assessment:

- **Topography:** Topography within 500 feet of the site (GIS topographic data may be used)

- **Steep Slope or Landslide-prone Areas:** Location of steep slope areas or landslide-prone areas within 500 feet of the site
- **Septic Systems and Drain Fields:** Location of septic systems and drain fields in the vicinity of the site
- **Underground Storage Tanks, Above Ground Storage Tanks, Residential Heating Oil Tanks:** Location of underground storage tanks, above ground storage tanks, or residential heating oil tanks in the vicinity of the site
- **Contaminated Sites and Landfills:** Location of contaminated sites and abandoned landfills within 100 feet of the site

For Roadway projects or Parcel-based projects with runoff from 5,000 square feet or more of impervious area infiltrated on the site, the following information shall also be evaluated:

- **Site Geology:** Local site geology, including soil or rock units likely to be encountered, the groundwater regime, and geologic history of the site
- **Water Supply Wells:** Location of water supply wells within 500 feet of the site
- **Contaminated Sites and Landfills:** Location of contaminated sites and abandoned landfills within 500 feet of the site
- **Groundwater Protection Areas:** Location of groundwater protection areas and/or 1-, 5-, and 10-year time of travel zones for municipal well protection areas
- **Anticipated Site Use:** Anticipated site use (street/highway, residential, commercial, high-use site that may affect the water quality of stormwater runoff)

For projects proposing to use deep infiltration BMPs, the following information shall also be reviewed and mapped:

- Regional geologic mapping
- Publicly available geotechnical exploration data
- Steep slope and landslide-prone areas within a quarter mile (1,320 feet) of proposed deep infiltration BMP location

Sources of data to evaluate site suitability include, but are not limited to, City of Seattle Department of Planning and Development Critical Area maps, Washington Department of Natural Resources Subsurface GIS, Flood Hazard maps, and other mapping information available from the City of Seattle (including Seattle Public Utilities and the Seattle Department of Transportation), King County, and consultant reports for other public agencies. Any of the above information identified as part of the review shall be shown on a map relative to the proposed infiltration location(s).

Using the site assessment information, evaluate the site for infiltration suitability based on the limitations and setbacks provided in Volume 3, *Section 3.2* and *Appendix D, Section D-2.2.4*. Based on this evaluation, identify all portions of the site where infiltration may be feasible. Additionally, for UIC wells, setback and site restrictions shall be in accordance with the UIC Guidance Manual (Ecology 2006).

## 7.3. Site Design Considerations

To manage stormwater effectively and efficiently, site design for both the construction phase and post-development condition should be done in unison with the design and layout of the stormwater infrastructure. Efforts should be made, as required and encouraged by local development codes, to conserve natural areas, retain native vegetation, reduce impervious surfaces, and integrate stormwater controls into the existing site layout to the maximum extent feasible. With careful planning, these efforts will not only help achieve the minimum requirements contained in the Stormwater Code, but can also reduce impacts from development projects and reduce the costs of water quality treatment and flow control.

Before designing the site and stormwater infrastructure, consider the following:

- Stormwater:
  - Identify the approved point of discharge and conveyance system flow path, both pipe and topographically
  - Manage stormwater runoff (quantity and quality) as close to the point of origin as possible
  - Minimize the quantity of stormwater collection and conveyance systems required
  - Use simple, nonstructural methods for stormwater management
  - Use dispersion, infiltration, rainwater harvesting, and alternative surface BMPs where feasible
- Landscaping:
  - Maintain and use natural drainage patterns
  - Preserve natural features and resources, including trees
  - Create a multifunctional landscape using the natural site hydrology as a framework for site design
  - Confine and phase construction activities to minimize disturbed areas, and minimize impacts to environmentally critical areas and their associated buffers
  - Plant new trees in proximity to ground level impervious surfaces for on-site stormwater management and/or flow control credit
  - Minimize or prevent compaction and protect soils
- Impervious and Pervious Surfaces:
  - Fit development to the terrain to minimize land disturbance
  - For sites with varied soil types, locate impervious areas over less permeable soil (e.g., till). Minimize development over more porous soils. Use porous soils by locating bioretention and permeable pavement over them.
  - Cluster buildings together
  - Minimize impervious surfaces (e.g., buildings, sidewalks)
  - Minimize pollution-generating hard surfaces (PGHS) (e.g., areas subject to vehicular use such as driveways and parking strips)
  - Minimize pollution-generating pervious surfaces (PGPS) (e.g., fertilized lawns)

# CHAPTER 8 – DRAINAGE CONTROL REVIEW AND APPLICATION REQUIREMENTS

Most construction projects in Seattle require a permit from the Seattle Department of Planning and Development (DPD) and/or the Seattle Department of Transportation (SDOT). There are two levels of Drainage Control Review required for construction permits: Standard Drainage Review and Comprehensive Drainage Review. The type of Drainage Control Review required is based on the total amount of new plus replaced impervious surface and the total amount of land-disturbing activity.

Forms and submittal documents for projects not conducted in the right-of-way (typically on private property) can be found on the DPD website ([www.seattle.gov/dpd/codesrules/codes/stormwater](http://www.seattle.gov/dpd/codesrules/codes/stormwater)).

Forms and submittal documents for projects conducted in the right-of-way can be found on SDOT's website ([www.seattle.gov/transportation/stuse\\_sip.htm](http://www.seattle.gov/transportation/stuse_sip.htm)).

The City also has resources available at the DPD Applicant Services Center, including DPD staff available to answer questions, and relevant "Tips" with detailed information for construction projects. Visit the DPD Applicant Services Center on the 20th floor of the Seattle Municipal Tower 700 Fifth Avenue, Seattle, Washington 98124, or the website ([www.seattle.gov/dpd](http://www.seattle.gov/dpd)). Copies of all available "Tips" are also available at the DPD Public Resources Center (same location as above) or visit DPD's "Tips" website (<http://web1.seattle.gov/dpd/cams/CamList.aspx>).

## 8.1. Standard Drainage Review

Standard Drainage Review generally applies to projects that involve 750 square feet or more, but less than 1 acre, of land-disturbing activity, and less than 5,000 square feet of new plus replaced impervious surface. For a project with no offsite discharge point as determined by the Director, the drainage control plan shall be prepared by a licensed engineer (refer to *Volume 3, Section 4.3.2*).

The submittals required for Standard Drainage Review shall include the following, at a minimum:

- Construction Stormwater Control Plan (refer to *Volume 2 - Construction Stormwater Control*)
- Post Construction Soil Management Plan (refer to *Volume 3, Section 5.1*)
- Drainage Control Plan
  - Site and drainage control summary
  - Existing drainage infrastructure

- Location of drainage discharge from the site
- Drainage collection and conveyance measures (e.g., inlets, catch basins, maintenance holes, downspouts, drain lines, subgrade drainage, pumps, etc.)
- On-site Stormwater Management BMPs and hard surface identification (see On-site Stormwater Management documentation below)
- Flow Control BMPs
- Water Quality Treatment BMPs
- Site Plan (elements can be incorporated within Drainage Control Plan)
  - Address of project and permit number
  - Creeks, streams, shorelines and any other Environmentally Critical Areas (ECAs)
  - Areas to be protected
  - Names, widths, and improvement types of adjacent streets and alleys
  - Type, location, and dimension of curbs, sidewalks, and street trees
  - All other trees at least 6 inches in diameter or larger measured 4.5 feet above the ground
  - Location of all existing and proposed driveways, parking areas, and other paved areas and hard surfaces
  - Size and shape of current and proposed buildings (including overhangs) and all other structures (retaining walls, etc.)
  - Entrances
  - Building identifiers (for sites with more than one building)
  - Ground elevations, flow lines and tops and bottoms of slopes
  - Existing and proposed below grade and above grade utilities and infrastructure
  - Property line dimensions
  - Existing and proposed easements
  - Setbacks
- Maintenance instructions
- On-site stormwater management documentation:
  - Hard surface identification (e.g., roofs, driveways, sidewalks, patios)
  - On-site Stormwater Management BMP selection and sizing (refer to *Volume 3, Section 3.3*, and *Chapter 5*)
  - Documentation of On-site Stormwater Management BMPs determined to be infeasible (refer to *Appendix C*)
  - Where dispersion is not feasible, documentation demonstrating infeasibility (refer to *Volume 3, Section 3.1*)
  - Where infiltration is not feasible, documentation demonstrating infeasibility (refer to *Volume 3, Section 3.2*)
  - Subsurface investigation, infiltration test results, or groundwater analysis, as required per *Volume 3, Sections 3.2* and *5.4.1*, and *Appendix D*

- Flow Control documentation, if triggered. Required documentation may include:
  - Flow control BMP selection and sizing (refer to *Volume 3, Section 3.4, and Chapter 5*)
  - Details of any flow control device assembly, including orifice and weir sizing and elevations, if used
  - Modeling documentation (refer to *Appendix F*)
  - Subsurface investigation, infiltration test results, or groundwater analysis as required per *Volume 3, Sections 3.2 and 5.4.1, and Appendix D*
- Memorandum of Drainage Control for projects not located in the right-of-way including, at a minimum (SMC, Section 22.807.020.B.1.d):
  - The legal description of the site
  - A summary of the terms and limitations of the drainage control plan
  - An agreement to inform future purchasers/successors/assignees of the existence, limitations, and inspection and maintenance requirements of the stormwater control BMPs
  - The side sewer permit number, date, and name
  - Permission for the City to enter the property for inspection, monitoring, correction, and abatement purposes
  - Acknowledgment by the owner(s) that the City is not responsible for the adequacy or performance of the drainage control plan, and a waiver of any and all claims against the City for any harm, loss, or damage related to the plan, or to drainage or erosion on the property, except for claims arising from the City's sole negligence
  - The owner(s)' signatures acknowledged by a notary public
- Operations and maintenance (O&M) plan for stormwater BMPs or include reference to the O&M requirements in *Appendix G* on the Drainage Control Plan

## 8.2. Comprehensive Drainage Review for Large Projects

Comprehensive Drainage Review is required for projects involving 5,000 square feet or more of new plus replaced impervious surface or 1 acre or more of land-disturbing activity, prepared by a licensed engineer. In addition to the requirements of the Standard Drainage Review, the following information is required for the Comprehensive Drainage Review:

- A Drainage Report including, at a minimum:
  - A narrative detailing the proposed project, summary of minimum requirements, and proposed stormwater management
  - Narrative of existing conditions including drainage basins, existing surface types, soil conditions, groundwater conditions, Environmentally Critical Areas (ECAs), and known contamination
  - Water quality supporting calculations (if triggered)
  - Drainage basin maps
  - Inspection and O&M requirements and schedule

### 8.3. Additional Documentation

Additional information may be required by the Director based on project specifics (e.g., infeasibility evaluation, existing conditions) to allow adequate evaluation of a project for compliance with the requirements and purpose of the Stormwater Code and other laws and regulations.

Such information includes, but is not limited to:

- Soils Analysis
- Geotechnical Report
- Survey of existing native vegetation cover (SMC, Section 25.11.050)
- Topographic / Boundary Survey (SMC, Section 25.09.330)
- Environmental Assessment for potentially contaminated sites
- Downstream Analysis
- Basin Analysis